ARCHITECTURE

REG. U. S. PAT. OFFICE

THE PROFESSIONAL JOURNAL

VOL. LXXIII
No. 4

APRIL
1936

CONTENTS

Frontispiece: The Nave, Cathedral of St. John the Divine, New York City
From an etching by Louis Orr

Bricks Without Brains — 193
By Grosvenor Atterbury

The Paris International Exposition of 1937 — 197
M. JACQUES GREBER, CHIEF ARCHITECT

Architectural Competitions — 201
By Percy Thomas

Rooms in Modernized Traditional Styles — 205
ARRANGED BY OTTO ZENKE

The Small House—Responsibility and Opportunity — 209
By Henry H. Saylor

Grover Cleveland Elementary School, Pasadena, Calif. — 211
ROBERT H. AINSWORTH, ARCHITECT

The Editor's Diary — 215

At the Architectural League Exhibition — 216

Favorite Feature: The Cloister, The Reformed Church, Bronxville, N. Y. — 219
HARRY LESLIE WALKER, ARCHITECT

New Housebuilding Techniques: The Corkanstele System — 221
By Norman F. MacGregor

House of Donald N. Gilpin, Colorado Springs, Colo. — 223
WILLIAM E. FISHER AND ARTHUR A. FISHER, ARCHITECTS

House of Hugh MacNair, Great Neck, N. Y. — 229
JULIUS GREGORY, ARCHITECT

The Reflecting Pool — 231
By Edwin Bateman Morris

Guest House of William Burnham, Weston, Conn. — 232
SCOTT & TEEGEN, ARCHITECTS

Portfolio: Gothic Buttresses — 235

DESIGN IN MATERIALS — 251

When changing addresses, subscribers must give four weeks' advance notice and both their old and new addresses

ARCHITECTURE is published monthly, appearing on the 28th of the month preceding date of issue. Price mailed flat to members of the architectural and allied professions, to any address in the United States, $3 per year in advance; to all others, $6; add $1 for Canadian postage and $2 for foreign postage. Single copies, $.50. Advertising rates upon request. Entered as second-class matter, March 30, 1900, at the Post-Office at New York, N. Y., under the Act of March 2, 1879.

Copyright, 1936, by CHARLES SCRIBNER'S SONS. All rights reserved.

CHARLES SCRIBNER'S SONS, PUBLISHERS

CHARLES SCRIBNER, *President*

EDWARD T. S. LORD, WHITNEY DARROW, MAXWELL E. PERKINS, *Vice-Presidents*

GEORGE R. D. SCHIEFFELIN, *Treasurer* JOHN HALL WHEELOCK, *Secretary*

NEW YORK: 597 FIFTH AVENUE AT 48TH STREET

[CHARLES SCRIBNER'S SONS, LTD., 23 BEDFORD SQUARE, LONDON, W. C. 1]

THE BUILDING TREND

By E. L. Gilbert

APPROXIMATELY 66 per cent improvement was recorded in the per capita figure for total construction in February, 1936, compared with the average of the years 1933–1935 inclusive. Residential building amounted to nearly twice the volume reported for last year, while an 80 per cent increase was registered in Commercial, Industrial, etc. . . . Total building construction, including all three classifications, reached $1.66 per capita in February, compared with $1.92 in January, and in contrast with an average of about $.98 for the month of February during the last three years. These figures represent the entire United States, as do the charts given below.

MONTH OF FEBRUARY

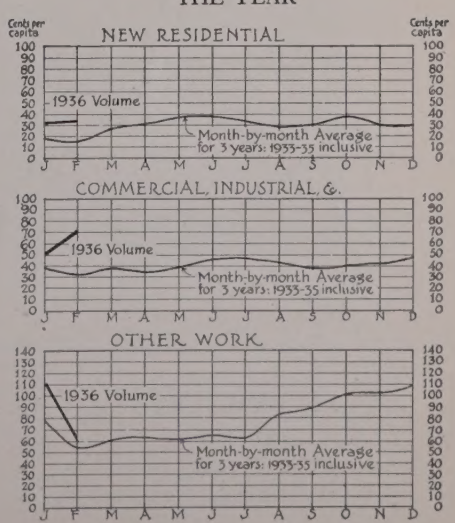
(DOLLARS PER CAPITA, ENTIRE U. S.)

CLASSIFICATION	1934	1935	1936
New Residential . .	$.15	$.18	$.34
Commercial, Industrial, etc.	.30	.40	.72
Other Work	.53	.58	.60
Totals . . .	$.98	$1.16	$1.66

Building Material Prices, U. S. Dept. of Labor, end of February* .	86.4	84.9	85.4

* Index numbers based on : 1926 = 100.

THE YEAR



THE NAVE, CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK CITY
From the etching by Louis Orr, American etcher of Paris

Reproduced through the courtesy of Edward H. Marsh of Springfield, Mass., representing Mr. Orr in America

ARCHITECTURE
VOLUME LXXIII NUMBER 4
APRIL, 1936

BRICKS WITHOUT BRAINS

A CHALLENGE TO SCIENCE, AND THE FACTORY-MADE HOUSE

By Grosvenor Atterbury

YOU can buy a first-rate automobile today for around twenty cents a pound—the price of ordinary lard. Twenty-five years ago you would have paid just about ten times the price for a car incomparably inferior in every way.

On the other hand, during that same period of time the price of a small house has about doubled—and it is probably not as well built today as it was twenty-five years ago.

This comparison doesn't seem to make sense. In fact, it indicates a serious economic and industrial dislocation. But even a superficial analysis makes the situation clear enough.

The formula for the motor car today is roughly 20 per cent material and labor, and 80 per cent brains; marvelously combined. That of the house is just the reverse—80 per cent labor and material, and 20 per cent brains—quite often less. And they are seldom properly mixed, at that.

Now, do not mistake this as a general indictment against modern building design and construction. Much of it is a marvelous example of scientific planning, co-ordination, and mechanization. It would be hard to find finer examples of this than the many-storied steel-skeleton structures that rise almost complete as fast as the derricks can climb skyward. But the point is that where this highly organized brain power is most vitally needed it is completely lacking.

Architecture can be spelled in two ways—with a capital "A" or a little "a." We usually talk about the capitalized kind—largely aristocratic or plutocratic.

But when we speak of "Bricks Without Brains," we refer, of course, to the architecture spelled with a little "a"—the common noun—which has been for years the forgotten branch of the family. This seems strange when you realize that it represents by far the largest single item in our national building budget, and most directly affects, at a safe guess, at least sixty or seventy millions of our people whose yearly family incomes average around $2000 or under. For it represents their housing or—in the case of a large proportion—what has been more truthfully described as their "ware-housing." We might call it "bread-line architecture." And it represents today one of our most serious social and economic problems—and a correspondingly great opportunity.

The three dominant factors in the housing problem are the cost of land, the cost of money, and the cost of building. And in any place where the poor man should properly have his home the cost of building is fully two-thirds of the total investment. We are taking steps these days to distribute our working population on proper land and to lower the interest charges. But what have we done to reduce construction cost? In a broad sense the answer is "Nothing."

This is said advisedly, in spite of the fact that the writer had the unusual opportunity of devoting some twenty-odd years to research work in this field under subsidies from various sources. The object was to demonstrate, not so much a specific solution of the problem of economic construction, as a scientific method of approach to that problem. The program aimed at laying the foundation for a new basic industry devoted to the economic production of homes for the lowest income groups, on a factory basis, with a consequent reduction in cost to the point where the profit motive could function as it does in other industries and produce housing under the normal operation of the laws of supply and demand, without artificial government stimulus or appeal to philanthropy.

Looked at with respect to the great human and economic need for a scientific solution of the problem, this one-man, one-horse effort seems puny indeed. Yet we know of no other attempt of equal scope on a similar basis of absolutely independent and scientific research.

Now, once we apply to this problem such science, brains, and capital as our great organized industries employ, the housing of the working man will not only cease to be a burden on the community, but a legitimate source of profit and a much-needed stimulus to our permanent economic recovery.

We will not go into detail as to whose fault all this is. But if you think about it at all seriously you will, perhaps, ask what Science—with a capital "S"—the science of really great minds, has been doing in this crisis. And with Science we must include the philanthropists whose hundreds of millions have made the work of science possible.

What really interests us most vitally today? Is it the discovery that my umbrella, if projected through space at sufficient velocity, will actually become shorter, until, if Einstein's Theory is what it is cracked up to be, it will disappear altogether? Scarcely. I can lose umbrellas fast enough as it is; and the ownership of an umbrella is an academic question anyway.

Or are we practically concerned that Nova Centuris "went bust" in the outer darkness thirteen centuries ago? It doesn't hold a candle to our little financial smash-up six years ago from which we are still reeling.

And now we are spending millions to build 200-inch telescopes to scan the universe and determine whether it is getting measurably smaller or incalculably greater.

All of which, in the present state of the realm, seems brilliantly useless, especially when you consider the millions who cannot afford decent homes because none of our great

NOTE.—The illustrations in this article, taken from some forty houses produced during the research work alluded to in the text, under the auspices of The Sage Foundation and others, are shown not as a specific solution of the construction problem but merely to demonstrate the degree of standardization and factory production employed and the comparatively normal architectural results obtained.

minds has ever been focused on the basic everyday problem of human shelter.

Science needs an intelligent board of directors. With a small amount of such brains as are now focused on the speed with which the neutron penetrates the nucleus of the atom, and only 2 or 3 per cent of the money now devoted to research into the living conditions at the dawn of history, the cost of the poor man's housing today could be cut in half.

And what are we doing? We are continuing to build in our good old Babylonian fashion, using brick, not without straw, but without brains. As a consequence of our failure to develop scientific methods of small-house production, the government, in its well-meant housing program, must needs tax us all—the poor man included—to produce so-called cheap housing. And in doing so it has no choice but to perpetuate our shockingly wasteful building methods and saddle the country with homes for the poor that, except for government subsidy, are beyond the reach of the people it is trying to house. Which is questionable even as an emergency measure.

What, may I ask, is the use of stimulating wasteful production, of priming a pump that will not hold water? For in this matter we must not forget two facts. First, that labor constitutes its own market. Labor must produce what labor can afford to buy. And, second, that when building labor because of intermittent employment asks from two to three times the wage of labor in other trades, there are only two economic alternatives. Either building wages must be reduced or the annual productivity of building mechanics must be greatly increased.

But what has actually happened? The man in the street knows—none better—what has happened to his rent bill in the past twenty-five years. The cost has more than doubled, following a corresponding increase in the wage and material cost of the building industry.

On the other hand, statistics quoted from the Department of Labor show that in many of the other basic industries, in spite of similar increases in wages, the manufacturing cost of the product has actually declined. In other words, the efficiency of labor has increased more than wages.

So we arrive at the deadly parallel: the productivity per man, taking the automobile industry as an example—and there are others even more striking—has increased 172 per cent, while the productivity per man in the housing industry has actually decreased, in some trades 50 per cent.

In the explanation of this lies the key to the solution of the housing problem. It is, of course, standardization, machine, mass, and factory production.

And this was confirmed by the results of the rather limited researches already quoted, which demonstrated that we could, at the start, produce fireproof shells of small houses at a saving of around 20 per cent as compared with the ordinary brick-and-frame dwelling; and erect them in four or five days each. And we only scratched the surface of the problem.

Now we have space only to discuss very briefly two objections frequently raised and vitally affecting the possibilities of the factory-made house.

One is economic and the other esthetic.

The ablest economists agree that housing production for the masses would be one of the most powerful aids to permanent economic recovery; would do as much or even more than the expansion of automobile production did fifteen years ago. But when one of the most prominent says: "House building is an old industry, and therefore, presumably, does not present the same possibilities of mechanical improvements in process such as naturally present themselves in a new industry," we take issue with him.

The fact is that, as far as concerns the workingman's home, we have never yet had any organized industry.

Automobile manufacture, even prior to 1921, was better organized and more efficiently conducted than the building of the workingman's little house is today. We were then—and still are, though with increasing exceptions—collecting our small houses in tens of thousands of little pieces, bags and bundles from all over the country, dumping them down on the site, hiring a dozen different kinds of workmen to fit them tediously together—each mechanic sworn to touch only one kind of stick, stone, or whatnot—and when the picture puzzle is finally put together in more or less water-logged condition, carting away again wagonloads of spoiled and unused material. It is an orgy of waste in time, labor, and material that would put any of our organized industries into bankruptcy. In this case the poor man, instead of the stockholder, pays the bill.

And when one sees this muss and litter and general disorder out of which such a house gradually assumes substance and shape—the hammering, sawing, measuring, losing, looking and finding, the waiting and scratching of heads—in "huddles" and out—all under the broiling sun, in rain and wind or snow—one is tempted to sing: "Come! Let's all build like the birdies build!"

Now, of course, this means standardization—not necessarily of the whole structure, but of its component parts—and this raises the second question. Will this annihilate all esthetic possibilities and produce millions of machine-made replicas with the monotony of prison cells and the hominess of ice-boxes?

Well, it all depends. Standardization can be a curse or a blessing—depending on the make of shoes you buy. For, like it or not, you and I are pretty good examples of standardization.

Standardized factory-made houses—Group 48 at Forest Hills Gardens in process of erection. Children's blocks raised to the nth power, assembled by crane. Sections were later reduced to permit use of ordinary derrick

In the good old days I used to have my shoes made to order—my clothes, shirts, and even my collars to measure!

On rare occasions I still dig out a suit which I had made to order in those halcyon days. But, normally, I am a complete walking catalog of factory products! And I should hesitate to embarrass my readers by asking those to stand up whose shoes, stockings, underclothes, shirts, collars, ties, hat, gloves, and at least everyday clothes, are not factory made also.

Yet nobody ever mistakes me for Smith or Jones—partly because they get their clothes probably on Fifth Avenue, while I get mine on the East Side; but principally because clothes do not make the man—if he is anything of a man—and partly, also, thanks to the law of permutations and combinations, which is the saving grace in standardization, as I will illustrate later.

Similarly the house does not make the family. If it did, heaven save us all in this country!

But this is not to say that in using standardization to house poor people within their means we are not bound to give them something more than mere bodily shelter and comfort—something better than warehousing. Far from it. We shall not be doing anything to boast about when we succeed in housing a man's body if we leave his soul to shiver outside.

But I take issue when any one says that standardization and its consequent economies in cost may not go further than window fasteners, door locks, and such things, on the ground that any further application of this principle would make it impossible to satisfy the esthetic demands of the problem.

Just how far standardization and, consequently, machine production can go without doing this depends on a number of factors. The limit varies with the size of the house, standards of living and taste, the extent to which quantity production can function, the cost factor, improvements in processes of manufacture, and other technical questions—not to mention the leaven of good design.

But it is merely a question of degree; not of principle. "Our Babylonian brick"—a phrase coined by the writer years ago—of which we are still building our walls by what H. G. Wells calls our "coral-reef methods" are, of course, completely standardized units; but in answering this housing problem their use is as silly a performance as it would be for the railroads to set their engineers to pushing baby carriages by hand and leave their great locomotives and cars in the yards.

On the other hand, the increase of the unit so as to comprise a complete house—as Mr. Edison once proposed, including in one mold, as he told me, even the bathtubs and stair-rails—even had it proved practical and economical, would have given us standardization at its worst—a curse instead of a blessing. Somewhere between these two extremes there is a happy mean, and I would point out that such a solution has been found and used in most of our arts without unduly restricting the imagination.

For while standardization is an ugly word, it connotes some of the things that appear essential to man's expression of beauty, no matter what the medium. And it becomes especially obvious in music and, our present concern, architecture. Without order and rhythm music becomes noise. On the other hand, the whole wealth of our musical literature is expressed by the use of but twelve standardized notes—in varying sequence, arrangement, combination, and repetition. And when our piano departs from these notes we say it is out of tune and restandardize it—because anything but these twelve familiar tones we think outlandish and quite incompetent to express beauty.

Again, we not only require certain conventions to satisfy our esthetic senses, but we find them essential for the expression, recording, and preservation of our arts. What would be the value of our literature were it not for our standardized words and alphabet? What would happen to our libraries, not to mention income-tax forms and cross-word puzzles, if we had to use, instead, four or five thousand ideographs like the Chinese? Lincoln wrote the Gettysburg address with only twenty-six letters.

So I doubt if the use of standardized structural units, in factory-made houses, should be blamed as much as the designer for any lack in esthetic quality the critic may find in them.

As a matter of fact, when it comes to small-house architecture, the writer believes, as a result of long experience, that the limitation of present costs, together with the restrictions of small-lot areas, reduce the possibility of variety in plan to such a degree that the best solutions in each size of house show astonishingly little difference. So the plan is practically standardized by economic requirements.

Now, like any manifestation of collectivism, standardization is a bad master, but, if properly controlled and directed, it may be a good servant. And if we make intelligent use of it in reducing the cost of that structural portion of the house requisite to man's physical comfort, we can thereby gain the freedom and means to pay heed to his esthetic needs. We can invite his shivering soul, not into a cell, but a home. But this prophecy is based on other than the purely economic advantages of standardization—certain indirect benefits that, strange as it may sound, have to do with the imponderables—such as raising standards of architectural honesty, simplicity, self-restraint and taste in color, texture, and detail; the good manners of architecture so necessary in the small house, which, however much it must answer to the individual character of its inmates, should, in its exterior, show a decent respect for its neighbors.

To accomplish this end it is not

The group shown in process of erection (opposite page) as it appears completed. Each house is composed of less than a hundred machine units instead of the thousands of hand units in ordinary construction

necessary to put the designer's imagination in a straitjacket—except in the case of those poor fellows who have gone hopelessly modernistic and want to put us all into weird cages or containers—where they should be confined themselves, of course. But until we have laws protecting our vision as we have for our sense of smell, it would be a great boon to have the trouble controlled at the source.

And this brings us to another very important, though insufficiently recognized, aspect of the matter. For with the poor man's house we are almost always forced to deal collectively. They must constitute units in a group, and the effect of the whole is more important than the individuality of its elements. As in architectural design, to a large degree, the disposition of ornament is more important than its detail.

If asked to illustrate in the fewest words possible the esthetic value of standardization in this respect, my answer would be the Greek temple and the Albertina Rasch Girls. What would become of the beauty of a classic colonnade if each column was of a different height and shape and color, or of an entablature where every detail "expressed itself" without regard to its neighbor, or a decent respect for the design of the cornice as a whole.

On the other hand, it is astonishing what uniformity and repetition can do when set to good rhythm and routine on fairly good legs. It is even more astonishing how homely the individual chorus girl can be in her architectural details and yet not spoil the show, provided she doesn't dress and dance to her own taste regardless of the others. This is not to argue that all chorus girls—or little homes—should be ugly. But each house need not be an architectural gem in order that the group or street or community may have charm and beauty, provided we architects and planners arrange the units of our routine as skillfully as are those of a well-trained chorus.

But, after all, the most convincing answer to those who say that standardization and esthetics can never inhabit the same dwelling would be actual examples to the contrary. For this purpose they should be houses constructed of standardized units such as to make possible the maximum economy in manufacture and erection, yet permitting substantially normal design of the whole without grave detriment to esthetic and architectural results. In other words, decent, self-respecting houses —not the cracker boxes that the lay mind is apt to assume must be the product of standardization.

Now, while the writer is not willing to rest his entire case on the examples illustrating this article—else he need not have written the foregoing pages—they appear to be the best available for the purpose. And whatever the reader's opinion may be, certain things can be said on their behalf.

First, that the casual visitor to Forest Hills Gardens passes them by without realizing that they are standardized factory-made houses, while their owners have lived in them for from fifteen to twenty-five years with apparent satisfaction.

Second, that they are all constructible out of some twenty standard units.

Third—by way of apology—that they were the first of their kind, born in fact after several years of incubation, way back in 1907—like amœba in the primeval ooze in the faint dawn of what the writer fondly hopes may become a new day in housing production — and, therefore, must be viewed with a certain leniency. For while they were, apparently, well ahead of their times, they are now, in some respects, out of date.

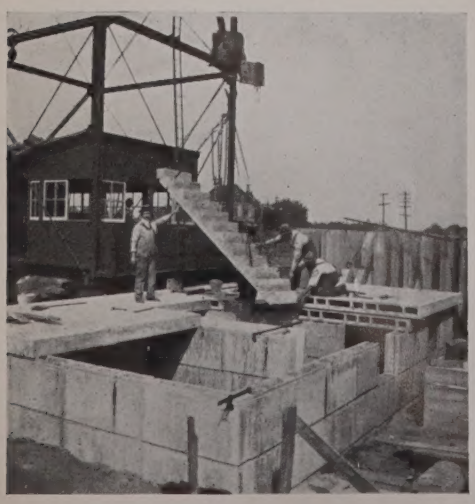
And, finally, that whatever progress they may represent in themselves, their chief value lies in the demonstration of the possibilities of that scientific approach to the constructional problem for which the writer is pleading.

For this we need the concentrated collaboration of the best brains in the country. The results we need will not come from the mere transfer by mediocre brains of our present building processes from the field to the factory, even though modified to permit of machine methods. We shall in that way, of course, make painful progress by trial and error. But what the crisis of today cries for is a far more radical and scientific attack: under the guidance of some powerful agency, free from all commercial influences, competent to evaluate and correlate the best work now being done, as well as inspire and direct concentrated and continuous research from the purely scientific point of view.

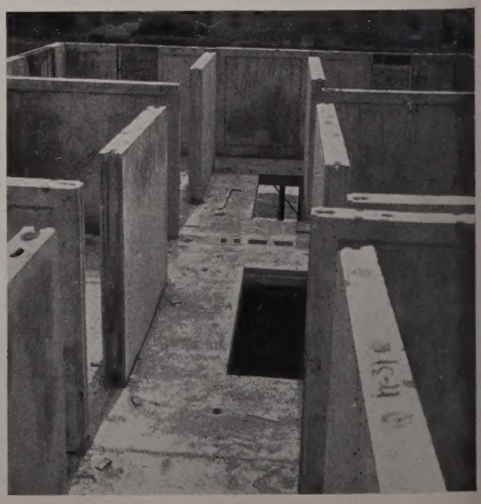
For, by way of prophecy, the great forward step toward ultimate economy in the production of homes for the poor will come with the complete abandonment of the dozen or so materials we now assemble in the field to meet the various structural requirements—a tedious mechanical synthesis—and the substitution of a chemical synthesis in the factory—with one material combining all the properties required.

Factory production of small homes for less than a thousand dollars is far less improbable today than was a five-hundred-dollar car before the organization of the motor industry.

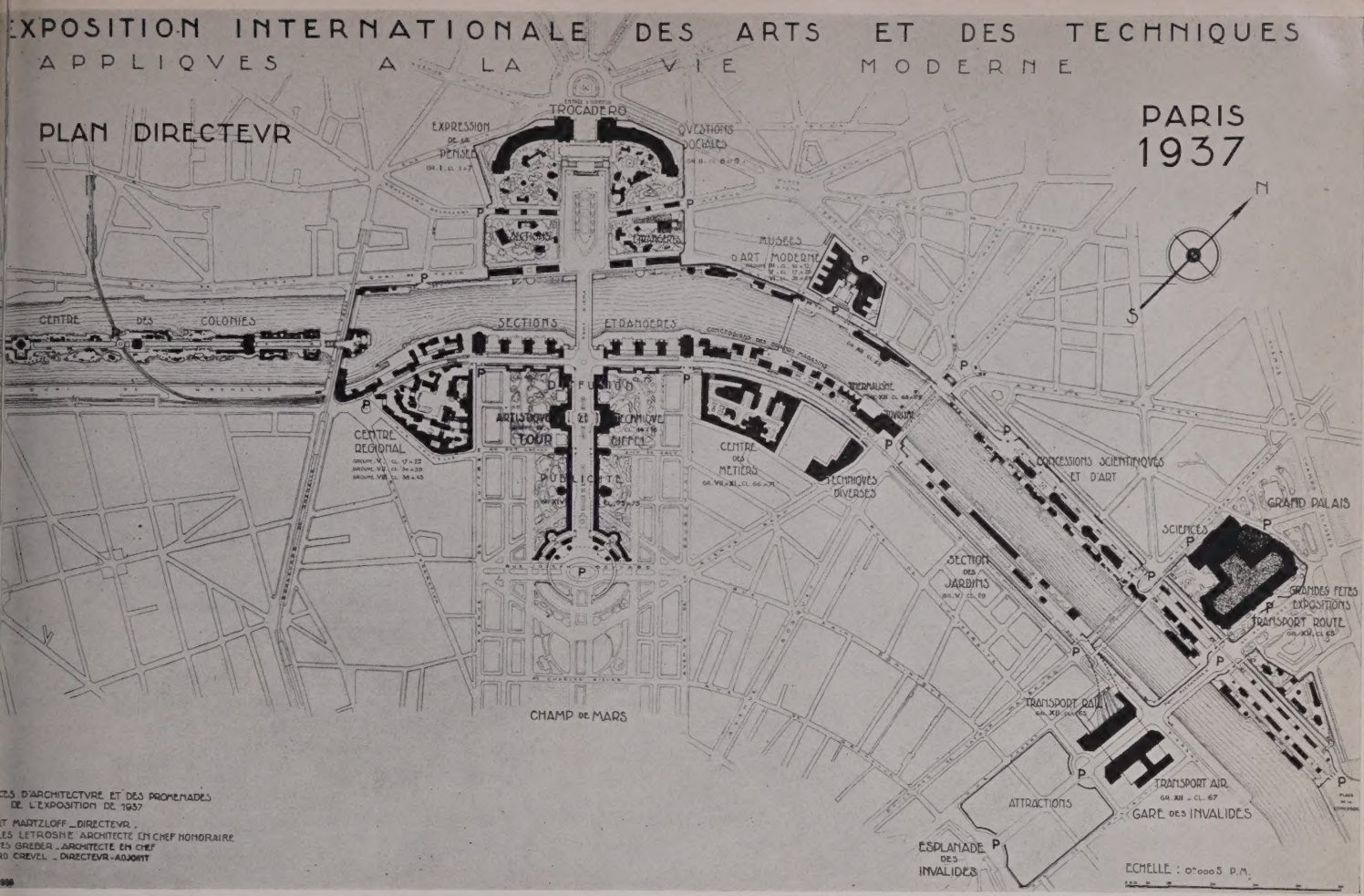
And, what may seem a surprising result of this mechanistic process, the leaven of beauty—far more vital to the poor man than to the rich—will not only survive but can work as it never has before in the homes of the masses. If the writer has not pointed out the right way, others surely will. For such a solution is clearly possible. Otherwise we must believe that waste is essential to beauty.



First run of stairs being set by crane man and three setters, Sewaren, N. J. Note tubular design of floor and wall sections with 60 per cent voids



When door and window frames were slipped into place between blocks, the building was ready for next tier of floor sections. Note absence of waste and rubbish



To demonstrate that art can render life better and more beautiful for all people, there will be held in Paris, from April to October, 1937, an International Exposition. The French government expects it to serve as an expression of international co-operation in the fields of intellect, art, and industry. Exhibits must be really original; copies and imitations of former styles will be excluded.

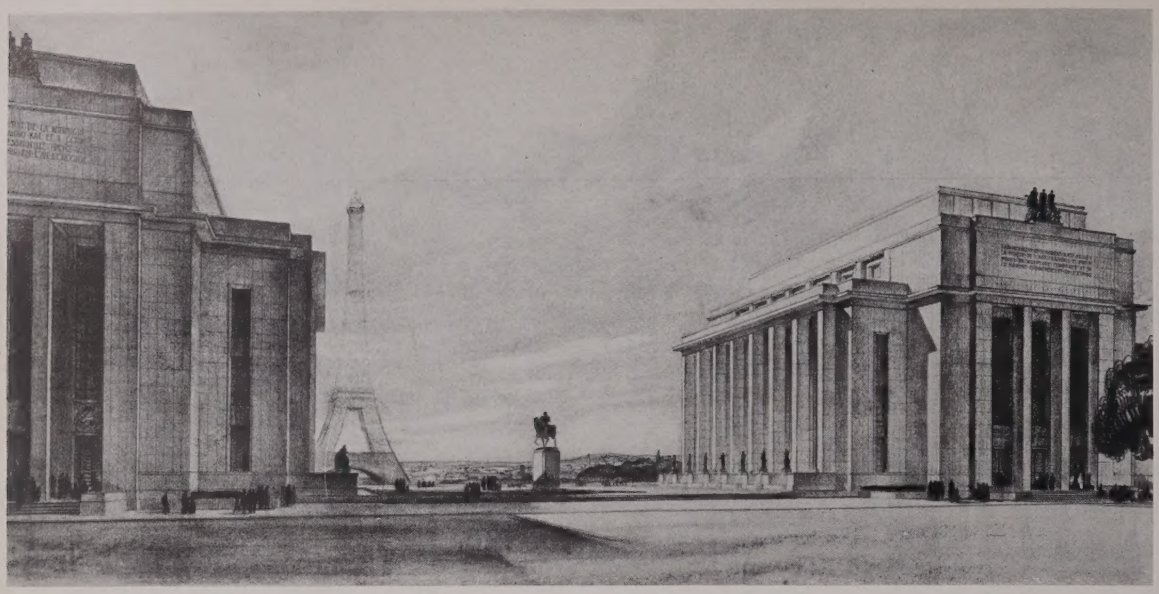
A site 156 acres in area has been chosen, together with supplementary areas nearby, and it is in the center of Paris, on both banks of the Seine from the Pont Alexandre III to the Pont de Grenelle—a distance of nearly two miles.

One-third of the total budget of 472,000,000 francs will be expended in permanent improvements: the redemption of certain blighted areas; the construction of two miles of planted terraces over the state railway on the left bank; widening the Pont d'Iena; creating an underpass at that bridge; building two museums of modern art; reconstruction of the Trocadero to give additional space for the Museum of Historical Architectural Sculpture and the Museum of Ethnography, and to house the Naval Museum (now in the Louvre), and to create a new Museum of Photography; creation of a vast terrace in front of the Trocadero, with a new Concert Hall under it, to seat 3500

M. JACQUES GREBER, CHIEF ARCHITECT

The Paris International Exposition of 1937

« ARCHITECTURE »
APRIL, 1936



Preliminary perspective of the Palais du Trocadero, as seen from the Place du Trocadero.

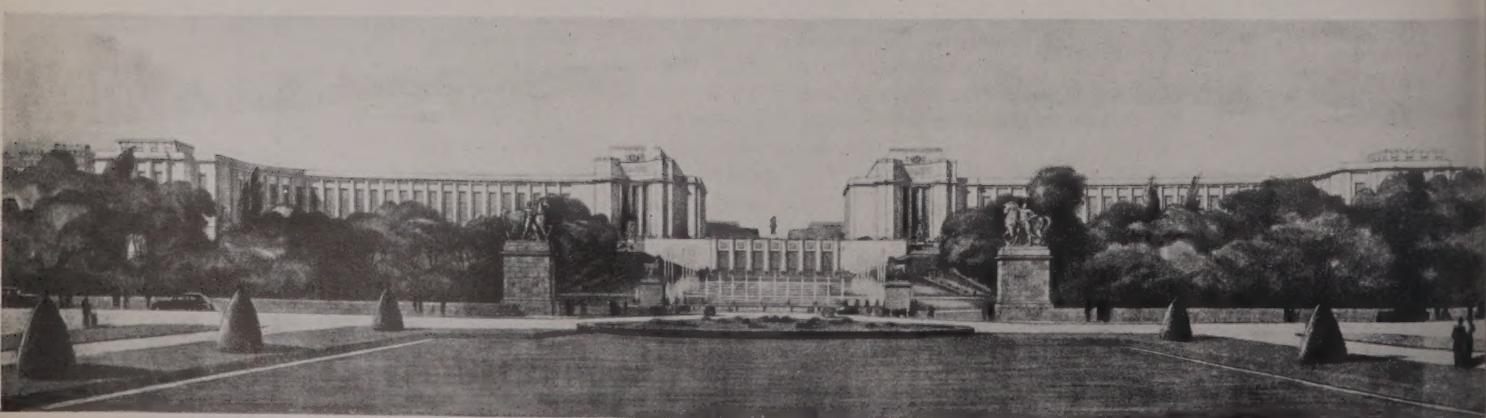
The silhouette and mass relation of all the buildings have been determined on a scale model of the entire site (including existing buildings and trees), before awarding to individual architects or groups of architects the final design of the parts. As a result of competitions open to all French architects, 230 were chosen and formed into 78 groups

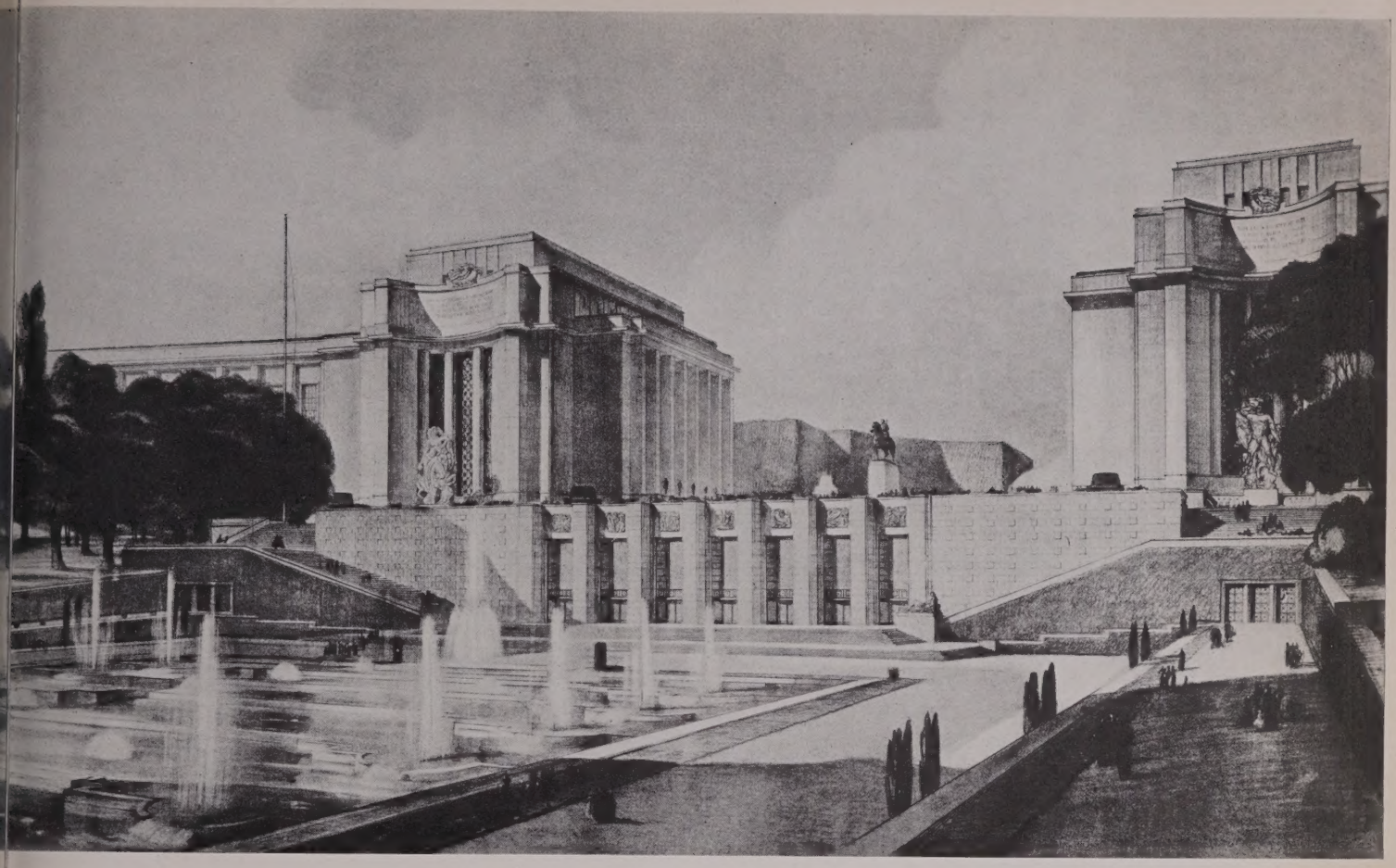
THE PARIS INTERNATIONAL EXPOSITION OF 1937

M. JACQUES GREBER, CHIEF ARCHITECT

Preliminary perspective of the Palais du Trocadero as seen from the Champ de Mars.

The buildings are being designed in a modern spirit but with no endeavor to be revolutionary or bizarre. They will be constructed of materials of the present—prefabricated units, stainless metals, glass, steel, and the like. The exposition, consequently, will be unique in character—the last word in modern design and materials, in harmony with a setting provided by an historical past



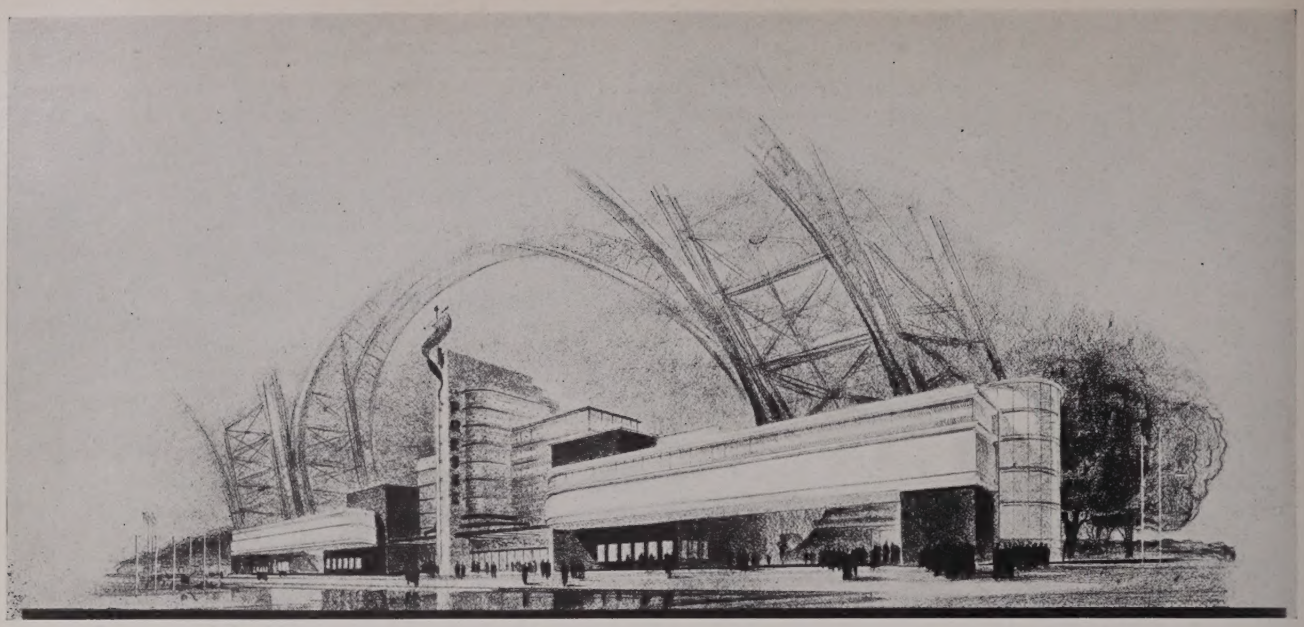


Preliminary perspective of the Palais du Trocadero as seen from the gardens leading down to the Seine.

The beautiful trees and shrubs of the quays, the Trocadero gardens, the Champ de Mars, the grounds of the former Garde Meuble, of the Grand Palais, and of the Esplanade des Invalides, will all be preserved. The art of the garden will be in evidence throughout the length and breadth of the site. This will give to the exposition the advantage of cool, shaded streets and will limit the size of the buildings. Structures of moderate size will line the streets and be placed in the gardens, and will have somewhat the appearance of beautiful shops, the attractive show-window displays inviting the visitor to enter and see the entire exhibit

THE PARIS INTERNATIONAL EXPOSITION OF 1937

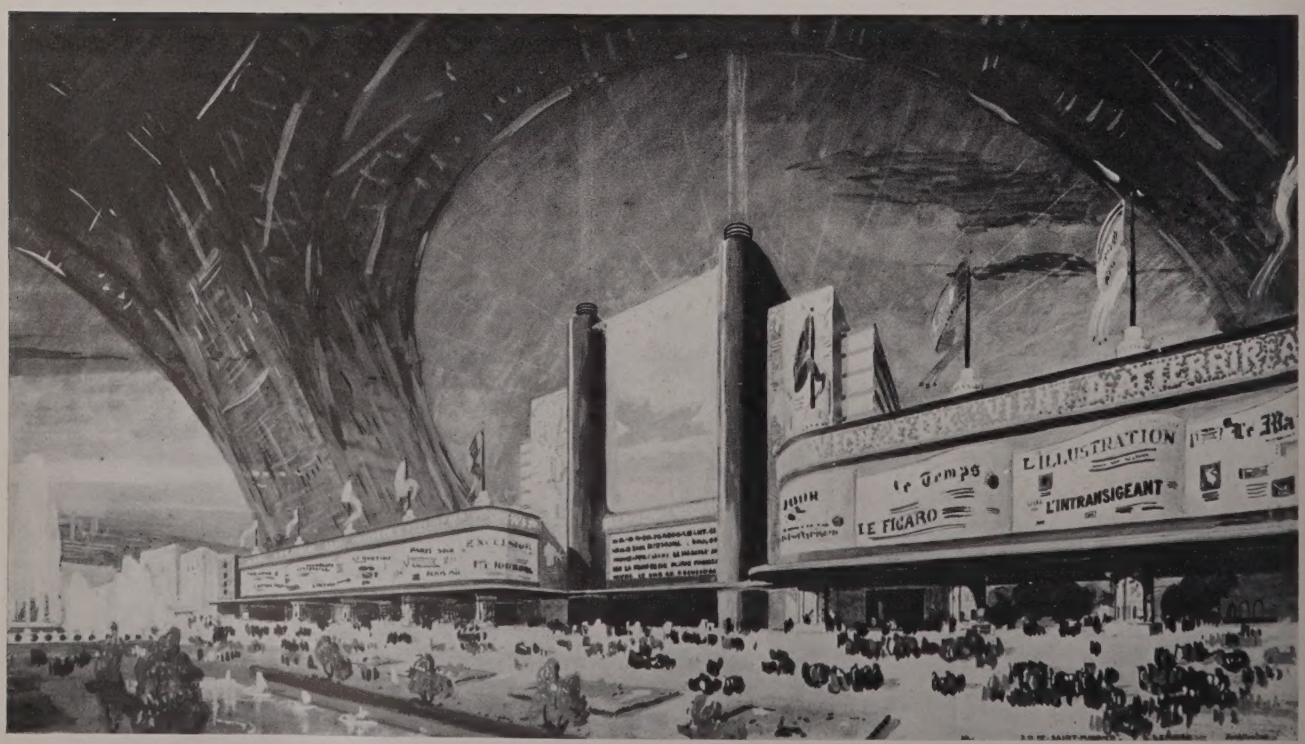
M. JACQUES GREBER, CHIEF ARCHITECT



Preliminary perspective of the Pavillon de la Presse.
The year 1937 will mark the fiftieth anniversary of the Eiffel Tower—creation of French engineering genius. At its base, under the huge lateral arches, will be built two low buildings of metal and glass, with terraced roofs

THE PARIS INTERNATIONAL EXPOSITION OF 1937. M. JACQUES GREBER, CHIEF ARCHITECT

Preliminary perspective of the Pavillon du Cinema et de la Presse.
It is here that the exposition will present the diffusion of artistic and technical knowledge—radio and broadcasting, television, photography, the press



ARCHITECTURAL COMPETITIONS

By Percy Thomas, O.B.E., F.R.I.B.A.

President of the Royal Institute of British Architects

A FEW years ago a well-known writer on architectural subjects, referring to architectural competitions, compared a successful young architect with a successful film star, in that both professions offered opportunities for a sudden rise to fame and fortune to the young and unknown member.

It is because I believe there is a good deal of truth in that comparison, and that it is the open competition system which makes it possible, that I accepted the invitation of the editor to write an article on this subject.

I hope, however, that readers will bear in mind that I am writing only of the system and the conditions which obtain in my own country, and I know not how far they are applicable, or desirable, in the United States of America.

In Great Britain, the system of architectural competitions is now generally recognized by government and public bodies as the accepted method of obtaining designs for all public buildings of major importance, and in the majority of instances the competition is open to all architects, irrespective of age or other qualification.

To my mind, this satisfactory position can be attributed to two principal causes—first, that the promoters are satisfied that the system produces for them the kind of building they require, and, secondly, that the profession are satisfied with the fairness of the conditions under which they compete, and of the ability and integrity of the professional advisers and juries.

Now although today one rarely hears a voice raised against the competition system, there have been in the past many criticisms, and it might be interesting to your readers to consider these objections and the arguments which can be put forward in answer to them.

1. There is the usual one about the waste and cost to the profession. A typical example of this was published in one of the technical journals, where the contributor proved that for a job to cost £70,000 the total cost to the profession was approximately the same amount. Simply put, that for every competition held, many times the amount of the fees are spent by the profession as a whole.

2. That the architect is not in close touch with his client in the early stages of the job.

3. That promoters in general, and the public bodies in particular, are unwilling to leave the final decision regarding the design of their public buildings in the hands of an assessor. It should be explained that in this country, in by far the majority of cases, a single assessor is appointed who performs the functions of professional adviser and jury.

4. That competitions are costly to promoters and involve delay in proceeding with the work.

5. That there is a danger in open competitions of an unknown and inexperienced architect being successful.

6. That for a number of buildings, particularly buildings of a special character, experts or specialists in that particular class of building should be engaged.

1. With regard to the cost to the profession, the architect can, after all, please himself whether he enters for a competition or not, and, apart from the fact that the estimated cost of preparing an architectural design is often exaggerated, it should be borne in mind that in the average architect's office ordinary work is not sacrificed for competition work, and that time is made for it; even the payment of overtime is in many cases entered into on a sporting basis by the whole staff.

Against the actual expense in wages and material must be counted the gain in experience and technical knowledge which is to be obtained from every competition. Every one who seriously enters for a competition knows that the preliminary research work and the production of the design add to professional knowledge and experience, whatever the result.

2. There is something in the objection that the architect is not in touch with his client in the early stages of the job, but if, when the competition is decided, the successful architect feels that any decision previously arrived at between the assessor and the promoters could be improved upon, there is no reason whatever why this should not be done. In practice I do not think the necessity would occur very often.

3. The third—the objection to delegating the sole authority to the assessor—I shall deal with more fully when I come to speak about the assessor. I am firmly convinced, however, that in the interests of the promoters as well as competitors the arguments are overwhelmingly in favor of our present system.

Our rules and regulations regarding the duties of an assessor could not be imposed upon persons outside our Institute, and, speaking generally, the average layman is quite incapable of judging the best solution of a planning problem, and his taste in the matter of elevational treatment is more likely to be influenced by the manner of presentation than would be that of a trained architect.

The objection that, because of the assessor's final decision, the promoters may have a design imposed upon them which they do not like and do not want to build, is answered by the fact that once the award is made they are at liberty to instruct their architect to make whatever alterations they require.

This has been stated to mean that competitions are merely to be considered as a means of selecting an architect, but this is obviously against the whole principle of our competition regulations, which are stated to be, "To obtain the best design for the purpose in view," and an examination of results will show that in practice it is the best solution of the problem which is placed first, and almost invariably carried out in the building.

4. A competition should make little difference in the matter of time. If an architect is engaged without competition he would, or should, spend the same time in digesting thoroughly the requirements of his clients, and in producing his preliminary scheme. In fact he would probably not work at such high pressure as the average competition requires.

I think it could be claimed that the directness and simplicity of buildings erected as the result of competitions are due to the thought and care spent in the preliminary stages.

As to cost, a competition means approximately in a building costing, say, £100,000, an additional 1 per cent to the promoters. These figures would be slightly increased for smaller sums and decreased for larger undertakings. For this additional 1 per cent, the promoters are able to obtain suggestions for the solving of their problem from some of the best architects in the country.

5. The fear of promoters in having an inexperienced young architect thrust upon them is, in practice, unfounded. Experience has shown that it is almost unknown for a man to win an important competition and be incapable of carrying out the work. Young he may be, but the very fact that to win in an open field calls for such qualities of planning, knowledge of the subject, and powers of grasping the essentials, insures that the winner, whoever he is, will be quite capable of carrying out his design. It may also be said that many of the leading members of our profession commenced a successful career by winning an open competition while young and unknown men.

6. The architectural specialist, unlike the specialist in other professions, obtains his position largely as the result of opportunity or accident, rather than deliberate intention. The main principles of planning and design are common to all classes of building, and while greater experience may bring perfection in detailed planning and equipment, it is more than counterbalanced by the freshness of mind and variety of solutions which are obtained by means of a competition.

The function of any building, whether a town hall, school, or hospital, is to fulfill its purpose in the most efficient and economical way, and, whatever the building, this fundamental principle remains the same and is largely a matter of skillful planning and sound common sense.

It should be remembered that success in competitions is not all luck. The architect who seriously enters for competitions knows that it is a waste of time unless he prepares himself by a thorough study of his subject, often involving many hours of research and visits to the latest buildings of a similar character.

So much for the objections to the competition system. Its advantages to the public are immense. It enables the building owner at a small extra cost to obtain solutions to his problem from some of the best men in the profession, and to retain the services of the successful one at the same fee that he would pay to any other member of the profession. It obtains for him the result of concentrated study of his particular problem; the experience gained in the latest building for his particular requirements both at home and abroad. It also means, in the case of public work, that the architect is appointed on merit alone and not by wirepulling or political influence, and for the profession, apart from the opportunity it gives to the young and brilliant man, it has done more than anything else to advance the art of planning.

A study of competitive plans will show that nearly all accepted arrangements for buildings such as baths, hospitals, courts, etc., are largely the result of the competition system, just as any new and original treatment of a problem generally comes from the same source.

It is the concentrated effort to produce something better than what has been done before, in order to win, that makes the standard of architectural achievement in competitions so high.

Competition Conditions and Regulations

The regulations of the Royal Institute of British Architects governing the promotion and conduct of architectural competitions are the result of years of experience and many bitter controversies, and while I do not claim that they are perfect, I do feel that if they are taken in the real spirit of fairness and common sense by the three parties—the promoter, the assessor, and the competitors—they will be found little wanting.

In the matter of secrecy, fees, and the amount of work required from competitors, little or no fault can be found with them, and almost the only source of trouble today is found in the instructions or suggestions which are inserted in the model form by the assessor or promoters in order to express their particular requirements.

It would appear obvious that either any design which violates a definite instruction should be disqualified, or all instructions should be suggestive only, and give competitors complete freedom in the matter. This latter course is not always practicable, as there are occasions when certain definite requirements of the promoters must be communicated to competitors. In spite of this, however, it is surprising how many people hold that an assessor is justified in ignoring an express stipulation on the grounds that his job is primarily to select the best design. I do not agree, and maintain he is in honor bound to restrict his award to the best design

AMERICAN ARCHITECTURAL COMPETITIONS:
APPROXIMATE AGES OF THE WINNING ARCHITECTS

ARCHITECT	AGE	BUILDING
Donn Barber	35	Connecticut Library and Supreme Court
Paul Cret	31	Pan-American Building
R. A. Cram	40	West Point
B. G. Goodhue	34	
John M. Carrère	40	New York Public Library
Thomas Hastings	38	
James Hoban	30	The White House
Raymond Hood	41	Chicago Tribune Tower
Guy Lowell	43	New York County Court House
H. Van B. Magonigle	39	McKinley National Memorial
Robert Mills	33	Washington Monument, Baltimore
H. H. Richardson	34	Trinity Church, Boston
James Gamble Rogers	44	New Haven Post Office
Egerton Swartwout	42	Missouri State Capitol
William Thornton	33	United States Capitol

which complies with the conditions he himself has laid down.

This matter, of course, is entirely the responsibility of the assessor, and no set of model conditions or rules and regulations can cover the occasional indiscretions of an assessor.

Now a word about the different types of competitions. They are, broadly, the open (single), the open in two stages (or dual competition), and the limited, with minor variations of all three.

Limited competitions are usually restricted to architects who receive direct invitation from the promoters, or who are selected by means of the submission of names and record of previous work. There have been a number of limited competitions in recent years, and there are many people, architects and laymen, who strongly advocate the principle. I believe the reason in many cases is that it gives them a sort of "safety-first" feeling. They feel satisfied that at least they know the worst that can happen.

Another argument used in favor of the limited competition is that for special buildings the competition should be limited to architects who specialize in that particular class of work. I have already stated what I consider are the objections to this argument, and they apply equally in this case.

It should also be borne in mind that the planning and equipment of special buildings are constantly changing with the progress of science and invention.

Personally, I feel that if the competition system itself is right, then the open competition is the simplest and fairest to the profession, and as it is undoubtedly the one which has produced our best men, it must also be the best from the promoters' point of view.

The open two-stage competition can only be justified in very exceptional circumstances. It has, I know, many supporters who would have practically all major competitions held in this way, but it is significant that few experienced competitors believe in it. They know that as far as the labor involved is concerned, the same amount of research work and thought must be put into the problem in the first stage. The elaboration of drawings, and even the working out of parts of the design are minor matters which take comparatively little time, and which in my opinion do not justify the delay and additional expense involved by a further stage. It can be safely stated that practically every competition of this character is won in the initial stage, and that the other competitors in the second stage are merely elaborating designs which have already lost, for it would take a bold man to depart fundamentally from a scheme which has already secured him a place in the second stage.

To overcome this difficulty one of the technical journals recently made the suggestion that before the second stage, the original sketches should be exhibited for all competitors to see, but that the sketches should be retained by the promoters for comparison with the final drawings, and would be binding upon competitors just as original esquisses are binding in student competitions, the idea being that any competitor selected for the second stage could retire if an inspection of the designs convinced him that it was useless for him to proceed further. But architects are all optimists and as the suggestion was also made that the competitors in the second stage should be paid a fee, I am afraid most of them would be tempted to take an optimistic view of their chances.

APPROXIMATE AGES AT WHICH CERTAIN ARCHITECTS WERE COMMISSIONED TO DESIGN IMPORTANT PROJECTS—NOT COMPETITIVE

ARCHITECT	AGE	BUILDING
Henry Bacon	46	Lincoln Memorial
Charles Bullfinch	24	State House, Boston
Charles Bullfinch	29	State House, Hartford
Thomas Jefferson	42	State Capitol of Virginia
Benjamin Latrobe	36	Bank of Pennsylvania
Benjamin Latrobe	39	United States Capitol
Charles F. McKim	40	Boston Public Library
Stanford White	28	Farragut Memorial, New York

The Assessor

Under this heading I propose also to deal with the question of juries.

The question of the assessor is probably the most controversial and difficult in the competition system. Many hold the view that the jury system ought to be generally adopted, their argument being that errors of judgment would be fewer, that there would be less chance of the result resting upon the idiosyncrasy of the assessor, and that there would be no playing up to the assessor's known opinion or prejudice, but the principal argument advanced in recent years is that with the jury system, the promoters could, if they desired (and they would desire), have representation on the jury.

I do not like the argument that you should include a representative of the promoters on the jury to make them feel that they are having some share in making the award. It does not seem quite honest, and if it is only their views that are wanted, surely these are obtainable before the designs are received, and the question as to how these views have been met in the designs submitted can only be decided by men whose training and experience render them competent to judge.

To the jury system itself, *i.e.*, a jury of architects, there can be no objection, although it is extraordinary how many architects, experienced in competitions, will prefer to leave the decision to one good man.

I consider that for most competitions, the single assessor, providing always he is competent, is the most satisfactory method.

The principle which I understand is common in America, of appointing a professional adviser who writes a program and conducts a competition but does not serve as a member of the jury which makes the selection, has not, to my knowledge, been tried in this country. It has always been felt that the man, or men, who advise the promoters and get to understand their requirements in the early stages, are the men best qualified to adjudicate upon the designs.

The Appointment of the Assessor

The appointment of the assessor is entirely in the hands of the president, for the time being, of the

Royal Institute of British Architects.

It can be realized that this does not always work out satisfactorily, and many suggestions have been put forward for an alternative method. The two most frequently advocated are (1) that the competitors themselves should select the assessor or jury, and (2) that the selection should be left to a body such as the Competitions Committee.

In support of the first, it is claimed that if competitors are to give of their best, they must have confidence in the men who are going to assess their work, and that this would best be achieved by the competitors themselves making the selection from a panel nominated by the president or the Competitions Committee.

One objection to this proposal is that the competitors as a body do not exist until they have studied the conditions and decided to compete, so the whole of the preliminary work of consultation with the promoters and the drafting of conditions and requirements would have to be done before the assessor was appointed and might convey ideas totally at variance with his own.

With regard to the appointment by the Competitions Committee, the objection to this is that the Committee is bound to include many of the men most suited to act as assessors. Are they to appoint themselves in turn, or are we to lose their services in this direction altogether?

I confess that at the moment I see no better way than the present, and although mistakes may occur, we have no guarantee that they would not also occur under a different system of selection.

In the selection of an assessor, it might interest your readers to know that, upon his election, the president nominates four advisers—men chosen to represent as far as possible all sections of the profession, and with a knowledge of the competition system. Upon being asked to appoint an assessor, the president invites each adviser to suggest two or three suitable names so that in addition to any whom he may think of himself, he is always provided with a list of suitable persons from which to make his selection, the final choice, of course, resting entirely with him.

Whatever the system by which the assessor or the jury is selected, the whole success or failure of the competition lies in his hands, and I think a few plain words about his judicial position might be useful.

It has long been the recognized rule of the Institute that once an architect has been appointed to advise promoters upon the possibilities and organization of a competition and to act as assessor in the event of a competition being held, it is out of the question for him to act as architect for that particular building which was to be the subject of the competition.

The assessor having been placed in the position of responsibility towards his fellow architects, either upon the nomination of the president or at the direct invitation of the promoters, must fulfill his obligations towards them and not allow himself to be placed in a position in which his integrity might be questioned. If for any reason whatever the promoters decide not to go on with the competition and ask the assessor to act as architect, no matter at what stage of the proceedings this decision may be reached, it is the manifest duty of the assessor to decline to act as architect for the work.

It is true that the operation of this rule may appear to work harshly in certain cases, but we have to remember that the whole question of the good name of the competition system is involved, and it is the bounden duty of the Institute to protect that good name even at the possible risk of apparent hardship in particular cases.

There is another consideration that should not be forgotten. An assessor is a judge. He is, in the eyes both of the promoters and of the whole architectural profession, in a position of special trust. To his judgment, without even such a right of appeal as affects a judge of the High Court, is entrusted the duty of making an impartial decision which affects the material interests of scores, possibly of hundreds, of his professional colleagues. His decision affects the expenditure of many thousands, perhaps even of hundreds of thousands of pounds of the promoters' money.

It is, therefore, of the utmost importance that nothing should be left undone which will establish in the minds of the promoters, the competitors, and the general public what may almost be called the sanctity of the assessor's status. Errors of judgment he may make; that cannot be helped. But there must never be the faintest shadow of a doubt cast upon his honor and his integrity.

It is for this reason mainly that the principle has been established that in no circumstances whatever should it be possible for any one to say or even hint that the decision or the advice of an assessor can possibly have been affected by the thought of his own material interests.

He is appointed to discharge a judicial function. He can have and should have no other connection of any kind with the matter.

The position in the case of an architectural assessor is a difficult and delicate one, from the very fact that he is himself in active practice. He cannot, like a judge, go to the bench and stay there. He fulfills his judicial function and then goes back to his practice. The very delicacy of the position makes it imperative that the principle stated above should be hedged and safeguarded in the most meticulous way, and that the principle should never on any excuse, however plausible, be departed from.

It is imperative, therefore, that an assessor should not be in a position to accept any kind of consultative or advisory commission in connection with the competition. If circumstances render a consultant necessary after the award, there is no real need for the assessor to be appointed in that capacity. It would be absurd to suggest that there are not other men in the country just as capable as he is of filling that position.

In spite, however, of all the difficulties and differences of opinion upon various details, I think it can be fairly stated that the architectural competition is now generally recognized as the accepted method of finding the best design for our public buildings, and the acceptance of this system, both by the public and the profession, is dependent upon the fairness of our conditions and the ability and integrity of our assessors.

Finally, I am of opinion that the competition system has a good stimulating effect upon architectural design. It holds out hope and encouragement to the young and hard-working assistant, and I find that public authorities are justly proud of the fact that the designs for their public buildings were obtained in competition open to the whole country.

Some of the decorators feel that there is a trend of decoration in America toward the modernized Empire, English Regency, Directoire and Georgian. This series of rooms represents an effort in that direction. A hall at the top of the main stairs is predominantly white; ceiling and walls are white, the niches serving to break up too great an expanse of white surface. An old console table stands under the painting framed in a mirror frame, and on the table are Waterford crystal candelabra

If there is anything in this series of rooms that falls short of satisfying the architect or decorator, he is asked to withhold his judgment until he has read the final caption on page 208

Photographs by Robert M. Glasgow

ARRANGED BY OTTO ZENKE OF THE DECORATIVE STAFF OF B. ALTMAN & COMPANY

Rooms in Modernized Traditional Styles

The entrance hall is dominated by a large wallpaper panel copying an old Dufour hand-blocked paper, "The Cid." Statuettes are on mirrored pedestals. Black-and-white marble squares cover the floor, and the furniture is covered in brilliant rust fabric. Entrance doors just outside the picture to the right are tall and of dark mahogany

English Regency has been taken as the basis of the dining-room scheme, with blue walls and a polished inlaid floor. Curtains and draperies are blue and white; the furniture, mahogany, with white chairs upholstered in white leather. A scenic screen provides the only figured accent in the room

Mr. Zenke has drawn on several periods for the bedroom. The tester bed and commode are of fruit wood, while some of the smaller pieces are painted. The use of a mirror screen and trim around the windows is entirely modern, but seems to blend well with the copies of antique furniture

In the library, traditional types of furniture have been used against a severely modern background—except for the Greek fret overdoor. The upholstery is a beige satin. Modern tables carry marbleized lamps. The two Chippendale armchairs are in green lacquer; rugs are modern and tufted

In the living-room, Mr. Zenke has used a modernized Empire suggestion, with warm gray walls and rug, white curtains, and draperies of green and white. The furniture is mostly fruit wood. The large semicircular bay window opens upon a flagged terrace, which is surrounded by a formal French garden

And now for the denouement: the interiors photographed in these four pages were built by Mr. Zenke at a scale of 1½" to the foot. So much effort has been put into the matter of properly scaled and textured details that it would be a keen observer indeed who would detect the fact that these photographs do not represent full-sized rooms. The photography, also, presented a real problem, for, as Mr. Glasgow points out, the point of view not only has to maintain the proper scale, but the proper light as well. Much of the photography was done with the use of mirrors—in some cases, a spotlight of 2000 watts was reflected from two different mirrors, and finally into the room. The interiors are now on an exhibition tour through some of the larger cities

Together with various traditional reminiscences in the bedroom, another photograph of which is shown on page 207, there is a strong modern note in the wood screen around the recessed mirrors of the dressing-table. The carpet also has an unusually pronounced tufted texture

THE SMALL HOUSE

—RESPONSIBILITY *and* OPPORTUNITY

By Henry H. Saylor

A FEW generations ago the medical profession might have said to the public, "If you want an arm sawed off or an appendix removed, we are at your service, but don't bother us with your smaller ills." Had that attitude been taken by the doctors, we should now be going to the druggist for anything less than a major operation.

Curious, is it not, that architects now view with alarm and outraged surprise the fact that the small house is being designed and built by men who took the job that the architect had spurned?

Look at it from another viewpoint. America has trained certain of her citizens to look after the health of the people; other citizens to know the law and advise upon it; other citizens to design and supervise her complex building. The doctor and the lawyer are doing their appointed jobs; the architect—well, some 80 per cent of American citizens are building their homes without his technical aid. Forget the esthetics involved: these citizens are taking, of necessity, what the jerry-builder and the profiteer and the land promoter and the honest, but technically untrained, builder are giving them, for a profit. If you picture America as a society divided into groups trained for the purpose of getting food, shelter, and facilitating the pursuit of happiness for all of us, the architect certainly isn't doing the job society has assigned to him. He is spending his time on the Lincolns and Cadillacs and Rolls-Royces, among buildings, and leaving the Fords and Chevrolets to be supplied, if at all, by the garage mechanic. And the large part of the public that is unable to pay for Lincolns and Cadillacs and Rolls-Royces is taking what it can get from the mechanic, who seeks a profit but who has neither the skill nor the professional lack of bias to earn it.

Professional medicine and the legal fraternity have long since found ways to serve the large part of the public that is unable to afford unlimited medical attention or legal advice. The professional technician in building must do the same. The responsibility rests with the profession, not with the public.

And as of the present date, the spring of 1936, there are signs that the profession of architecture has at last awakened to this responsibility.

The years behind us are strewn with the wreckage of abortive attempts to meet the public need for better small homes. Prominent among these attempts were—and still are—the selling of plans. The profession knows, even if the public does not, that selling a plan is just about as effective as selling a sick man a bulk order on the drug store and telling him to go fill it and get well.

The doctors found a better way of rendering service than that—and I keep harking back to these parallels between ourselves and other professions for the reason that there are significant lessons that we can learn from them, rather than striking out blindly upon theoretical paths of our own devising.

The doctors devised the clinic. It made possible two things: the poor man can come to it and get the best diagnosis and prescription that medical and surgical skill affords; the doctors and surgeons can give quickly and efficiently of their knowledge and skill without having to spend three quarters of their working hours driving from the home of one patient to another, ringing doorbells, removing and donning coats and hats, unpacking and packing kit bags, stopping for traffic lights, answering irrelevant telephone calls, and all the other time-consuming details of the general practitioner's daily routine.

Taking a leaf from the doctor's book, the architect should be able to render technical service in building more easily and at decidedly less cost if he does not have to spend evenings and week-ends with a garrulous client, does not have to listen each night to telephone inquiries as to why the plumbers left the job at noon today, does not have to redraw plans because the housewife has just decided that she must add a shoe closet, or the prospective owner believes that, after all, he will require garage space for another car.

Just how the architect can render an adequate service more quickly and at less cost is at last being worked out. The details will vary, geographically, and in accordance with the volume of the practice. The important point is that the profession is attacking the problem instead of ignoring it.

At the Milwaukee Convention of last spring the fuse was lighted by a resolution:

"*Resolved*, That the Committee on Small Houses be instructed to study the development of a possible method of offering architectural service in the field of the small house in a manner appropriate to the opportunity and to the demand, and be further instructed to report the same to the Board of Directors at the earliest possible moment."

At the December meeting of the board the directors endorsed the proposal of the Committee on Housing to establish, through the assistance of the chapters, local groups of architects prepared to furnish plans, specifications, and individual supervision in the small-house field. And the march of progress was on. Buffalo, Washington, Baltimore, Boston, Salt Lake City, and New York soon organized groups of architects who saw the light.

Nevertheless this movement, like others before it, might have died aborning, had it not been for another important fact. After years and years of making building loans and issuing mortgages upon mere bulk of building, without so much as a serious question as to the technical quality of the house itself, as to the neighborhood in which it was built, as to the owner's continuing ability to meet interest payments—not to mention the merely academic question of amortization, and as to the probability of the building's remaining intact and comparatively fit during the period of the loan—after years of this inefficiency on the part of the loaning agencies, these latter suddenly awoke. The immediate cause of their awakening may have been the noise of collapsing values, and the rattle of foreclosure proceedings with regard to properties which were no longer worth their mortgage loans.

FHA and HOLC hung out some Stop, Look and Listen signals. You may or may not care for initialed government activities, but these two have turned the rugged in-

dividualism of realtors and bankers, in their home mortgaging activities, into saner and safer paths. FHA and HOLC said that a mortgage loan should be amortized, beginning with its date of issue. A mortgage loan should be insured, like any other risk, and here is a federal mutualized insurance company to underwrite it. A house on which a mortgage loan is sought should be honestly worth its cost—well designed and supervised in construction—and the responsibility lies with the loaning agency. A loan should be safeguarded by its maker both as to the homebuilder's proper choice of site and as to the community's actual need for additional housing.

These rather obvious essentials, now clearly and emphatically restated, brought sharply into focus the architect's opportunity to catch up with his professional responsibilities. Without them he would have been facing the age-old problem of educating the low-income home builders as to their need of technical aid. With them, the loaning agencies, instead of ignoring the architect, will be sending clients to his clinics. Moreover, the cost of architectural services is being recognized by the loaning agencies as properly chargeable in the cost of the house and therefore as a part of the mortgage loan—an essential element in the cost, together with those of materials and labor. Thus, architectural service is no longer regarded as a luxury, obtainable by those who can afford something beyond the necessities, but rather as the first essential, without which a mortgage loan becomes at best a second-class risk.

Such a beneficent combination of circumstances as that which now exists is portentous—the awakening of the architects to their neglected duties and opportunities, and the government-inspired consciousness of a need of the architect's aid on the part of the loaning agencies. If the problem of small-house practice is not solved now, it seems likely that the profession will not soon again have a chance to tackle it, for it will be taken over by those more adaptable to its demands.

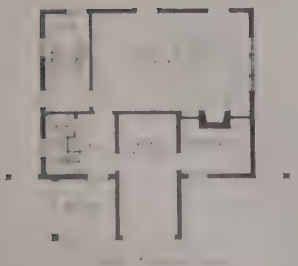
There is almost a crusader's spirit activating the groups of architects—mostly younger men—now being formed in the metropolitan centers. In the possession of this spirit they are alike; in their procedure they differ. Washington has its headquarters in a large loaning institution and the service is being advertised in the newspapers at the institution's expense.

Buffalo's group got off to a running start in collaboration with various agencies combining in a Better Homes Week.

Boston is building on the foundations left by the Architects' Small House Service Bureau, adding some new designs and incorporating supervision by the member living nearest the project, no matter whose the design.

In New York the difficulties of supervision in scattered sites in the distant suburbs are to be lessened, it is hoped, by a central supervising agency—possibly one of the group members.

Details of procedure are lacking, as this goes to press, regarding most of the groups. In a forthcoming issue, it is hoped, there may be an account of how each group functions. A comparison of ways and means should be of help to all. Any attempt at a rigid national pattern, I fear, is doomed to failure; conditions vary too widely for that. There is but one really vital element to be held by all these groups and others to come: the service offered must be a complete service necessarily limited, paradoxical as that sounds. In other words, no one of the essentials can be omitted; design, contract documents, supervision; though any or all will be abbreviated as may be practicable in this class of work.



SMALL·HOUSE·ASSOCIATES

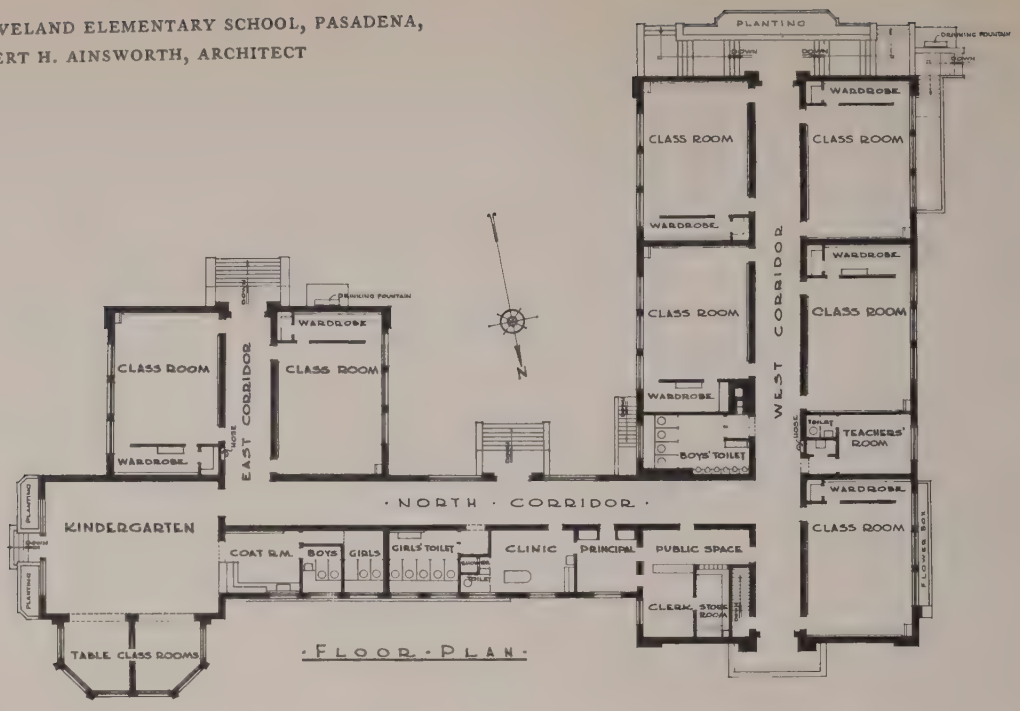
At left, a typical example of what the New York group is doing in the presentation of its basic designs

Here is a school building which expresses very clearly the architect's conviction that if beauty is to be obtained in much of his work, it must result from the manner of handling simple materials and the functional members of the structure. More specifically, the school reveals some of the possibilities that lie in the use of monolithic concrete

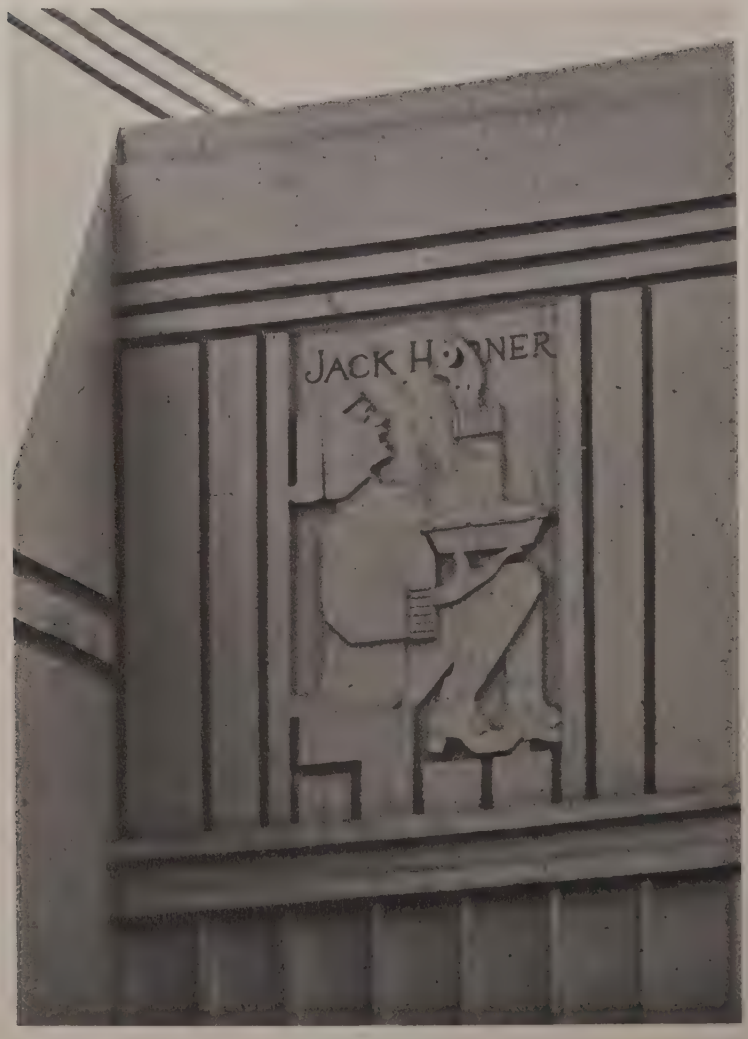
ROBERT H. AINSWORTH, ARCHITECT

Grover Cleveland Elementary School, Pasadena, Calif.

GROVER CLEVELAND ELEMENTARY SCHOOL, PASADENA, CALIF. ROBERT H. AINSWORTH, ARCHITECT



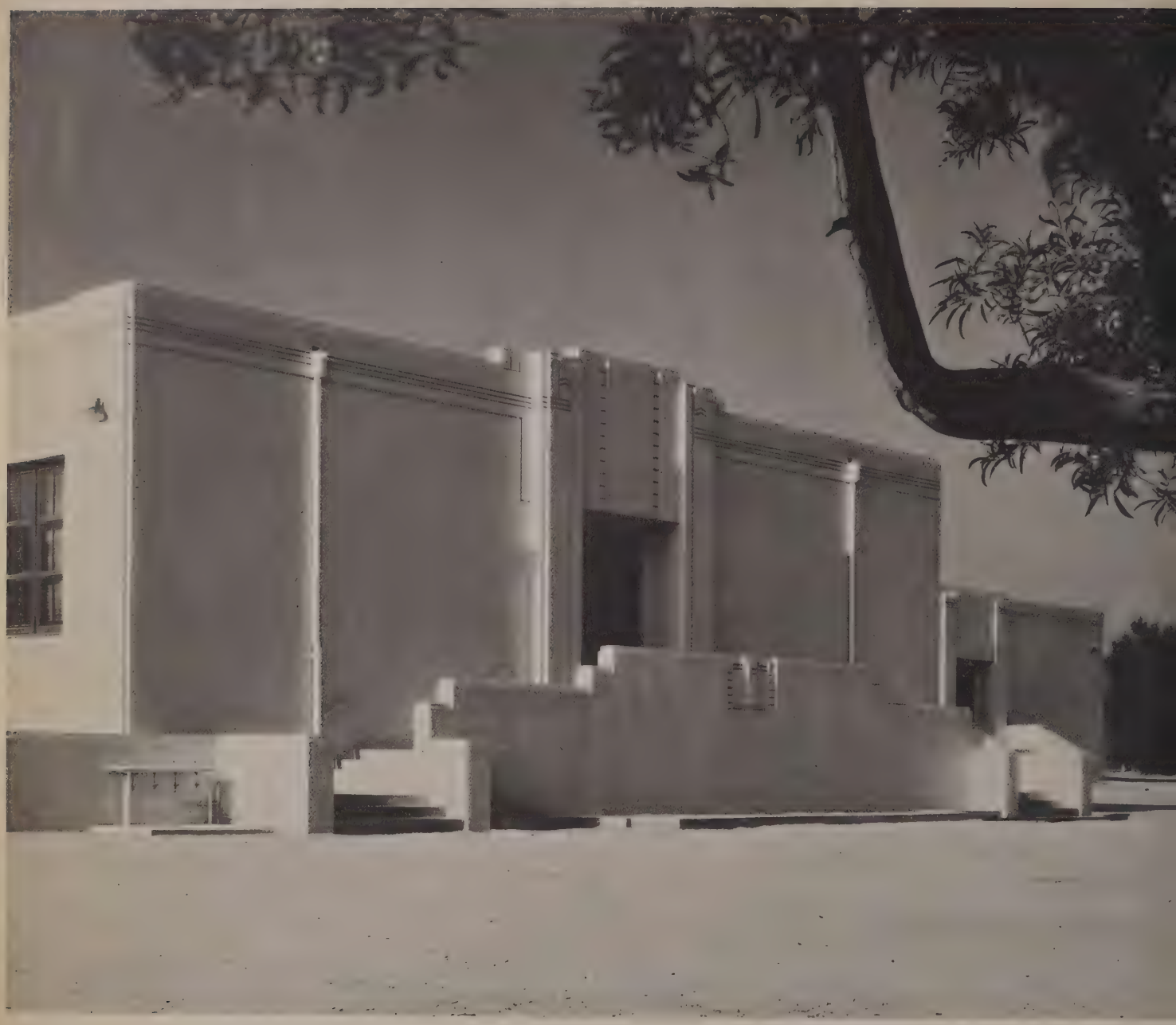
The plan represents a typical small elementary school in a community where the cost of land imposes no great restriction upon open planning. It replaces a previous school building on the same site



All exterior surfaces were formed against oiled plywood, with a very restricted use of waste mold for ornamental panels. The mix was about 1 : 2½ : 3¼, with 6¼ gallons of water to the sack of cement

The kindergarten bay. Exterior walls are poured in a hollow monolithic section, with solid walls of smaller section for the corridors. An extra percentage of very fine sand was used to facilitate filling the rather thin forms, broken up as they were by wooden inserts for the reveals, and internal vibrators were used, necessitating extra bracing

GROVER CLEVELAND ELEMENTARY SCHOOL, PASADENA, CALIF. ROBERT H. AINSWORTH, ARCHITECT



The poured concrete walls were painted a cream color with cement paint, the window trim and entrance doors painted olive green. As a precaution against damage of the surface by workmen in removing the waste molds, the inner surfaces of these latter were lined about one quarter of an inch thick with material of a different color from that of the rough backing; this served to warn the workmen that they were arriving at the surface of the concrete

GROVER CLEVELAND ELEMENTARY SCHOOL, PASADENA, CALIF. ROBERT H. AINSWORTH, ARCHITECT

The Editor's Diary

Saturday, February 1.—I was talking today with a man who has achieved an enviable position as an authority on international affairs and their interdependence. It seems that he went abroad as a news photographer, having proceeded in his education no further than the beginning of high school. In London he went to a wise counselor, and said: "How can I live in London, acquire an education, and support myself at the same time?" The wise man, after some consideration, said: "You can support yourself by contributing news photographs and news items to your American press. You can acquire an education by reading diligently, for four years, *The London Times*." It is not surprising that the scheme worked, for into the columns of the staid *Times*, in the course of four years, would certainly find its way a learned discussion by excellent authorities of practically any subject one might name. Incidentally, the study of *The Times* also produced the leads for news which, dished up in a more appetizing form, found ready acceptance in the American press.

Monday, February 3.—To Alexander Girard's office and apartment to see a model he has just completed for a new art school in New York City. The model itself was beautifully lighted from within and from without where it could be examined in detail by the group of professional men who had come to see it. It is a rather nice custom this, of having one's professional associates and acquaintances come in to see and criticize a piece of work still in project form. It is a pity it is not done more often.

Wednesday, February 5.—One is more and more amused these days at the striving for a use of materials that has never before been known. If you will accompany almost any decorator to his or her, probably *her*, latest job, there will be pointed out to you chair seats made of white calfskin, table tops made of asphalt, furniture in which appear woods that to your untutored eyes may look like oak or walnut, but which you are told are Scandinavian butternut and Mongolian tulip wood. Draperies are seldom, in these days, just fabrics—they are woven of Iceland goat hair, Siberian seal, or East Anglican skunk. Almost anything you may touch in the modern decorator's product is made of a material of which you have probably never heard. Just how and why it is better for its purpose, is left to your own vivid imagination.

Thursday, February 6.—Lewis Mumford launched a series of lectures on social and economic implications of housing with the first one this evening on the poverty of housing progress. The lectures are under the direction of the Housing Study Guild at the New School for Social Research. Mumford gave us a particularly vivid picture of housing progress, or lack of it, from the sixteenth century to date. As he pointed out, one of our greatest difficulties in securing housing today lies in the fact that as the standard of home demands rises, as it has been doing steadily, it becomes more and more difficult to secure a minimum standard of decent housing for the low-income third of the population. It is an interesting thing to contemplate the steady march upward of what we demand as a minimum standard. Housing is no longer four walls and a roof, with access to the town pump, but involves a growing complexity of equipment, comforts, and accessories. Housing as simple shelter would undoubtedly be within reach now, but meanwhile our demands have moved on, and the goal is even more inaccessible.

Saturday, February 8.—All of us have at least some sort of a vision in these days of the time not so very far distant when everything that industry puts into a structure will be prefabricated, brought to the site, and slipped into place with a minimum of field labor. There are certainly many men and an imposing array of minds expending every effort toward this end. I am not at all sure that there is not, as Harrison Gill points out, a lesson for us in one of the most common elements used in building today, the wood window. Here is an item that is, and has been for some time, a prefabricated product. The wide distribution of manufacturers and the keen competition to place the finished product in the structure at the least possible cost, has produced what? Not an assembled window, which is decidedly more easily made in the shop than on the job, but a knock-down product in a carton, which has to be put together on the site. Here is an instance of the economic development of one of a building's most important parts. Its development has been entirely brought about by the natural factors involved. Presumably it could be brought to the site as a completed window, framed together, glazed, painted. If that had proven itself to be the most economical way of getting it into the job, that is the way it would be done. Possibly, therefore, we are expecting too much in prefabricated wall panels which are delivered to the site completely finished inside and out, ready to be hung to a frame, and produce overnight a building.

Monday, February 10.—I see that the National Gallery of Art, which Mr. Andrew Mellon plans to leave in Washington as a treasure house for the many things he has collected during an active life as a connoisseur, is to be designed by the Office of John Russell Pope.

Wednesday, February 12.—Mr. W. J. Cameron, whose Sunday evening talks on the Ford hour are usually informative, pointed out, the other night, the effect of the motor-car on building. For instance, it has brought about the construction of some fifteen million garages, one hundred seventy thousand filling-stations, thirty thousand salesrooms, fifty thousand repair garages. It is a lot of building. Of course, the building of roads was obviously a direct result of the motor vehicle, but it did more than build roads. It must have had considerable influence on building costs and methods. The motor truck hauled bigger loads of brick and stone over longer distances in less time and at lower cost. Altogether, the building industry has a great deal for which we may thank the motor vehicle.

Friday, February 14. — Louis La Beaume says that the battle of architectural styles is over, and the result is a draw. The Modernists are retreating from their extreme position, and the Traditionalists are moving ahead. Doubtless a large part of this tendency to dig trenches in the middle ground is due to the fact that during the past five years or more, as La Beaume says, the architectural profession has been busy not in the practice of architecture, but in the discussion of architectural theories. "Both sides have often been eloquent, and sometimes logical." Out of it all, the great fact for which we may be thankful is that beauty is being sought as avidly as comfort.

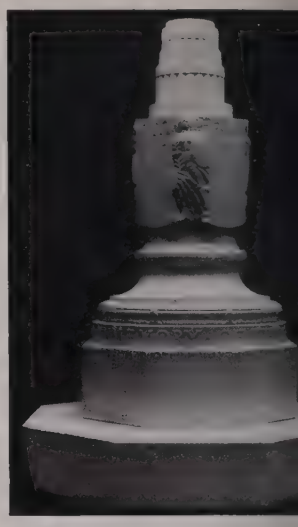
Saturday, February 15.—Had an interesting session, lasting most of today with William Stanley Parker and some of his associates in Boston's effort to supply a limited architectural service for the builder of the small home. It was particularly interesting to find out certain minor points of differences in the proposed method of conducting this practice as between the Boston group and the New York group. Boston believes that the designs available are in sufficient number and variety so that the prospective client will find just what he wants, and changes from these should not be really needed, and if needed, should be paid for. The supervision is then entrusted to the member of the group near the job, no matter who has designed the house. They believe in

(*Continued on page 218*)

Relief for the Kansas City Liberty Memorial; Edmond Amateis, sculptor. H. Van Buren Magonigle and Wight & Wight, architects

"The Young," directly modelled terra-cotta sculpture by Waylande Gregory. Awarded the Avery Prize for Sculpture

Flagstaff base for Milwaukee War Memorial. Benjamin Hawkins, sculptor. Awarded Honorable Mention in Sculpture

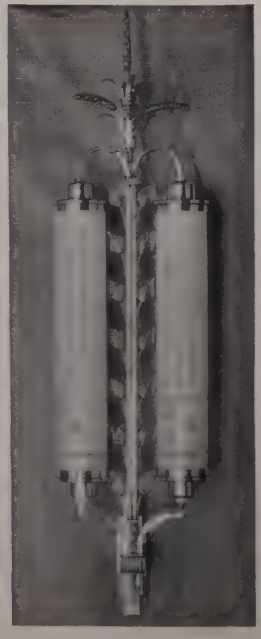


At The Architectural League Exhibition

Exterior detail of an indoor tennis court on Long Island. James W. O'Connor, architect. Awarded Silver Medal in Domestic Architecture

Entrance court, residence of Richard Hellman, Scarsdale, N. Y. A. F. Brinckerhoff, landscape architect; Lewis Bowman, architect

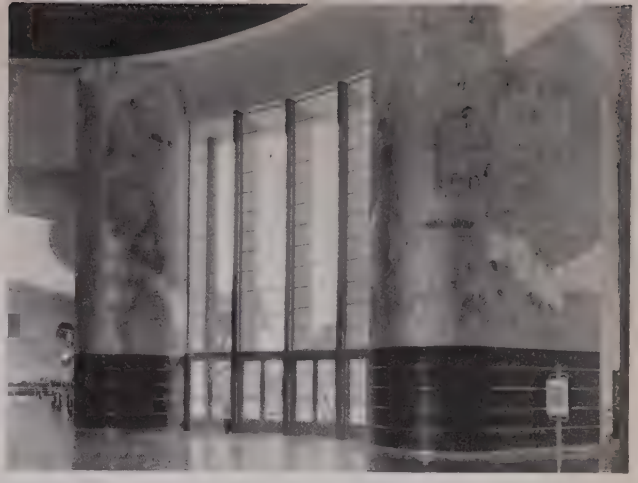
Wall fixture in matt aluminum finish, with crystal and engraved alabaster. Designed and made by Edward F. Caldwell & Co.



Reception hall, with old linen-fold pine, old bull's-eye glass casements, and stone floor. Arden Studios, interior decorators

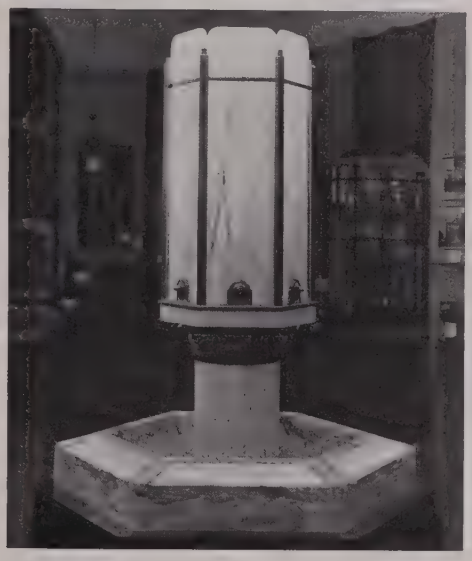
Living-room from foyer, apartment of Morris Sanders, architect. Awarded Silver Medal in Domestic Architecture

Hay barn, Westchester County, N. Y. Grosvenor Atterbury, architect



Murals in the entrance rotunda of the Ford Building, San Diego Exposition: "Spirit of America" and "Spirit of Asia." Painted by Charles B. Falls. Richard S. Requa, architect; Walter Dorwin Teague, designer

Water-color rendering by Elizabeth Hoopes of a dining-room by McMillen, Inc., interior decorators. Miss Hoopes was awarded the Birch Burdette Long Memorial Prize for Rendering



Fountain of Lumar, a translucent marble. Designed by Vahan Hagopian, architect; exhibited by Vermont Marble Company

Detail from mural at Evander Childs High School, Federal Art Project in New York City, painted by J. Michael Newell: "Evolution of Western Civilization." Awarded Medal of Honor in Painting

A circular extension dining-table, 5′ in diameter extending to 7′ diameter. Designed by Henry Kotzean of Schmieg, Hungate & Kotzean— for distinguished achievement in the making of fine furniture, awarded the Gold Medal in Design and Craftsmanship

Main entrance, residence of David O. Selznick, Beverly Hills, Calif. Roland E. Coate, architect, awarded Honorable Mention in Domestic Architecture

Detail of steel doors for U. S. Government Exhibition Building. Design and craftsmanship by Oscar B. Bach

Post Office Building in Chattanooga, Tenn. R. C. Hunt & Co., architects; Shreve, Lamb & Harmon, consulting architects

(*Continued from page 215*)

Boston that supervision consisting of a visit to the job before one takes the morning train for the city is the ideal sort. New York, on the other hand, has a feeling that such intimate contact with the job and the client may involve the architect in charge with evening calls in person or by telephone regarding the minutiæ of the job and why it isn't being built more quickly. The New York group's feeling is that to cut costs, all this must be ruled out, and the job given about five stated inspections, leaving to the owner and the builder the many arguments why the plumber or some one else isn't at work this morning. New York, moreover, feels that this inspection can be more efficiently done through a central office supplied with trained inspectors. It is these differences of practice in the various groups now working at the problem that will need to be ironed out through the application of the trial and error system.

Wednesday, February 19.—Considering the difficulties that faced the introduction of the Mutual Mortgage Insurance Plan a little over eighteen months ago, the Single Mortgage System has had an especially wide and quick acceptance. There were many hurdles in the path to start with. Mortgage lending laws in all of the forty-eight States had to be changed, and this has actually been done by legislative action in forty-five States. Moreover, a system of appraisal and underwriting had to be established. There are sixty-four underwriting offices in the forty-eight States, Hawaii, and Alaska. In addition to the rapid progress made by the scheme under the National Housing Act, it now seems evident that the great majority of lending institutions are establishing their own machinery for the writing of first mortgages in which amortization is immediately begun. In many States, the Single Mortgage Plan is not tied to the scheme of mutual insurance under the National Housing Act, but is being put into effect on a wide front without the insurance provision. I should venture the prophecy that within five years, at the outside, the amortized mortgage, with or without an insurance feature, will be so universally recognized that any other type will be an oddity. That is progress in full stride.

Friday, February 21.—We think of the term "air conditioning" as a product of quite recent inventive progress. As a matter of fact, as the Air Conditioning Manufacturers' Association themselves point out, the term was in general use as far back as thirty-two years ago. It appears in Stuart W. Cramer's book, published in 1904, and was in use before that time. Of course, in those early days it described practically the same functions of air warming, heating, and moistening as it does today, but was then considered practicable only in connection with certain manufacturing processes.

Sunday, February 23.—Columbia's Avery Library acquired an interesting collection of drawings recently by gift from J. Henry Lienau, the son of Detlef Lienau, an architect practising in New York in the mid-Victorian era. Plans, working drawings, sketches, and photographs of work in the Metropolitan district, in Newport, and in New Jersey are included, showing the actual details of the famous gingerbread houses that marked the popular taste late in the second half of the nineteenth century. There were no blueprints in that day, and the architect, as he still does in England to a large extent, made delicately colored drawings. The elder Lienau came to the United States in 1848 from Germany, and was one of the founders of the American Institute of Architects in 1857.

Tuesday, February 25. — Charles Z. Klauder over from Philadelphia, telling me of the interest that he and his confreres on the Treasury Department's Advisory Committee on Architectural Design find in their work. Messrs. Klauder, Aymar Embury, Philip Maher, and Henry Shepley, with the Supervising Architect, make up this committee. A meeting is held each week in Washington where all the designs in progress are reviewed in detail, and written comments made upon them, subject, after correction, to further comment or approval. Frequently the designer in charge of the work is called in to explain the reasons for certain forms, or to debate with the critics the advisability of various parts of the design. There is no attempt on the part of the committee to have all of the government's architecture poured into one mould. They recognize the responsibility of holding fast to certain geographical traditions and vernacular—a post-office for Santa Barbara will differ widely from one in Natchez, or one in Salem, Mass.

Wednesday, February 26. — W. L. Wood, editor of *The Architect and Building News*, over from London to see, among other things, what we are doing in magazine publishing on this side. His problem differs from ours mainly in that he edits a weekly, which must be, first of all, a newspaper. The tight little island wants its news of competitions and costs and building progress hot and wet from the press. The weekly journal, therefore, has little time to spend on niceties of arrangement and beauty of presentation, which are elements that the American journals hold to be of paramount importance.

Thursday, February 27.—At midnight I staggered home after a six-hour session with a group of men who have given years of study and research to various phases of the mathematical bases of design. Edward Edwards told us of his efforts toward a simplification of teaching elementary design. Scott Williams had developed independently a somewhat similar simplification of the fundamental rules of composition in his teaching at the New York School of Applied Design for Women. Rutherford Boyd showed and explained a wood model which he had carved into a form based on the use of a parabola, substantiating the fact that a purely geometrical basis of design in three dimensions can express a beauty that man feels inherently right. Dr. William Churchill showed us the results of years of research among early writings in the placing of numbers and numerical relationships in apposition with letters and words. And Wilford Conrow showed us his simplification in geometrical form of the elements of the human body for purposes of representation. The human body naturally differs widely, but Conrow claims that deviations from this geometrical norm are evident at once to the eye of the artist. Any one of these branches of the same large subject would, to me at least, have sufficed to fill an evening with all the knowledge that I could conveniently assimilate. And so to bed.

Friday, February 28.—McCall's Magazine, like many of the journals circulating among the homes of America, is getting more excited about home building. Their latest scheme is to start building a certain house in various parts of the country at the time it appears in the magazine. The idea is that the readers can find plans and a perspective of a house, and, without too much travel, can go see it being built. I was particularly amused, however, by the condescension of a sub-title in the April issue, "Our Architect Helped."

Saturday, February 29.—At the annual luncheon of the Municipal Art Society today, George McAneny told us of his inspiring plans for the World's Fair in 1939. We heard also some other suggestions as to what the fair should be: from Olin Downes, music critic of *The New York Times*, as to what the fair should do with and for music; from Richard F. Bach of the Metropolitan Museum of Art, who put in an eloquent plea for art in industry; from Michael M. Hare, representing the youth of America in an iconoclastic mood; and Royal Cortissoz who pleaded that whatever the fair be, it be made beautiful. I was particularly interested in noting that Mr. McAneny apparently has in the front of his mind's picture, a great architectural setting. What is to be inside of the buildings is important, naturally, but I sensed again and again his emphasis of the fact that the fair must first of all be a magnificent and fitting spectacle, an inspiration in its plan and architecture. The other elements will follow.

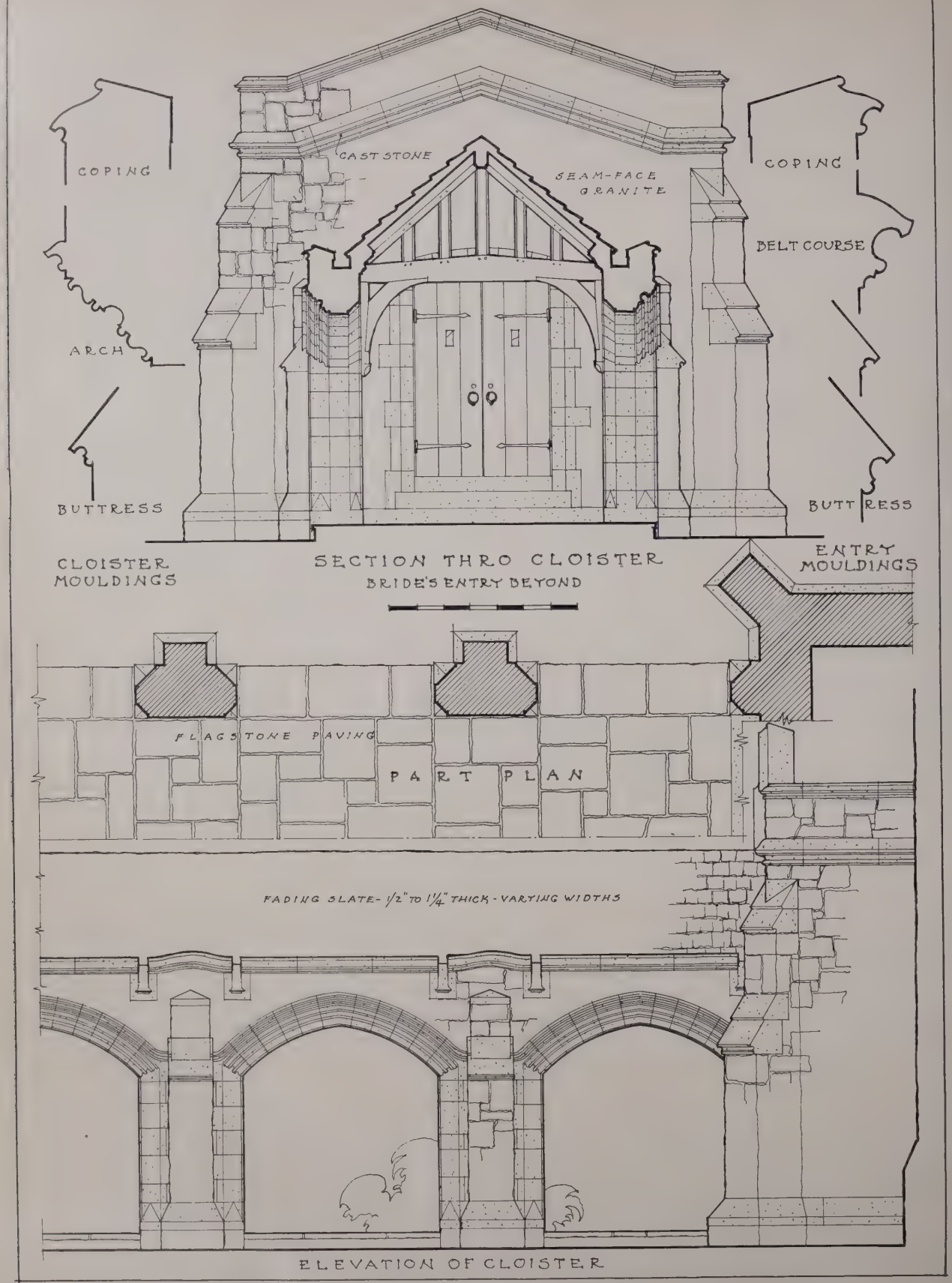
Many of the architect's creations fail to measure up to his expectations. Here is one of a series, however, that satisfy, in a measure, the designers themselves

(*Scale details overleaf*)

The Cloister, The Reformed Church, Bronxville, N. Y.

HARRY LESLIE WALKER
ARCHITECT

FAVORITE FEATURES



The Cloister, The Reformed Church, Bronxville, N. Y.
Harry Leslie Walker, architect

NEW HOUSEBUILDING TECHNIQUES

Introduced by the technical survey made and reported by the FHA, which was printed in ARCHITECTURE'S *November and December issues, we purpose reviewing in detail these new methods and materials. A snap judgment among them is impossible. For the present, all we can do is to present the new systems. Their ultimate acceptance or rejection will depend largely upon your faith in their merits and your willingness to submit them to the test of use—"the proof of the pudding . . ."*—EDITOR.

The Corkanstele System

BY NORMAN F. MacGREGOR, JR.

TWO demands are being created simultaneously in the mind of the American public. The first is for low-cost dwellings; the second, for quality construction. When the great wave of building which is confidently prophesied, finally surges over us, the architect will be called upon to weld these apparently irreconcilable elements, and provide a structure that is not only economical to erect, but that will be economical to maintain as well.

Obviously, before this can be accomplished, the initial expenditure must be removed from its position of primary importance, and placed in its true relationship with such fundamental factors as upkeep costs, durability, and fire safety. In other words, the house must be viewed in a forward perspective, extending over a period of at least a decade, to determine wherein true economy lies.

From this point of view, the new housebuilding techniques assume an additional importance. Particularly is this true of Corkanstele, for it is not intended to reduce the initial construction costs, but rather to provide a more scientific structural method; resistant to all forms of internal disintegration; fireproof; and insulated under terms of exact precision against noise and the infiltration of heat and cold. This, at a cost but slightly higher than that of an ordinary frame building, insulated in the customary way.

It is a semi-fabricated system, wherein steel angles and pure corkboard support the building. Thus the insulation becomes an integral part of the construction, and protects the building in its entirety. The method has no influence upon architectural style, but relates itself solely with the internal supporting members. The exterior and interior finish, finish floors and ceilings, decorations and mechanical equipment are all applied within the complete option of the architect.

Corkanstele is a patented construction and may be used only under special grants issued by the owners of the patents or their authorized agents. It is evolved directly from industrial refrigeration, and differs only from its industrial parent in refinement of detail, adjusted thickness of the pure cork wall body, and the introduction of windows and doors. Obviously, there can be little question as to the insulating efficiency of a system with such ancestry, for where a change of temperature of but a few degrees might occasion the loss of a hundred thousand dollars worth of meat, eggs, fish or ice, precision must be paramount and proved. Corkanstele permits the same accuracy of thermal design in a residence that is found in industrial practice. No provision must be made for excess capacity to cover uncomputable factors such as poor workmanship and similar contingencies. The insulation heat loss is precisely computable, and—true to its industrial precedent—obtains over walls and roof complete.

CONSTRUCTION AND DESIGN PROCEDURE

The building may be designed by the architect in the ordinary manner and without any consideration of the structural method to be employed, but it is advisable for him to plan, wherever possible, upon the basis of a three-foot module for the exterior walls, as this is the stock width of the cork, and an adherence to this principle would naturally tend to reduce the cost of the building, materially. Stock steel sash windows may be obtained to fit in with this module.

A general contract is let in the ordinary manner, for everything except the Corkanstele framework, and includes excavations, foundations, exterior and interior finish, roofing, and all mechanical trades such as plastering, plumbing, carpentry, heating, ornamental painting and decoration.

After the foundations are completed, the structural framework is set up of standard structural steel members, designed to carry the required loads in accordance with the specifications of the American Institute of Steel Construction. The studs, 3′ on centers, consist of two steel angles, placed back to back, and are rigidly anchored to the foundations as shown in the diagram. Rabbeted corkboard, 36″ x 12″ x 3″, is then slipped into place and clamped to position by horizontal steel T-bars, which are clipped to the studs, and which act as additional lateral bracing. The envelope is completed by a strip of cork slipped in at the rear of the angles, which completely sheathes the steel with insulation, and prevents any possible conduction, with resultant condensation. Any exterior or interior finish may be applied directly to the corkboard without provision for air space, and, if desired, a stucco or plaster finish may be used without recourse to steel lath, the porous surface of the cork supplying ample bond.

Structural steel beams, laid 3′ on centers, are provided for the floors, and these are covered with precast corkcrete slabs, 36″ x 12″ x 2¼″. The corkcrete is a fire- and soundproof concrete, made of portland cement, sand and pure cork granules, reinforced with steel wire mesh, and precast in steel forms to the standard size required. The

resultant material is almost light enough to float in water, and saves one ton of dead load for every cubic yard used. Nevertheless, it is extremely strong, and has been tested to failure under a concentrated load of 700 pounds at the center point, and over a span of 32″. The subfloor, thus provided, is then ready for any finish desired. Hardwood may be laid in a mastic, or a composition flooring may be applied directly to the corkcrete surface.

The roof is constructed in an identical manner, and may be either flat or at any desired pitch. Roofing slate, etc., may be nailed directly into the roof slabs.

Partitions are built up of corkcrete blocks, 12″ x 36″ x 3″ (or double where required to accommodate pipes, etc.), laid in cement and lime mortar. These partitions, when erected, are ready to receive a finish coat of plaster.

Advantages

The advantages claimed for Corkanstele construction are based primarily upon the certain nature of the insulation. Cork, itself, is a natural insulating material of thoroughly proven quality, but most of the insulating materials in common use have a similar heat-passing laboratory rating. This rating is called "K," and is the number of B.t.u.'s which will pass through an ideal sample in thirty minutes. The value of the method, therefore, is dependent not so much upon the insulator as upon the method of application.

Thus "K" becomes variable on the actual job, when subjected to the hazards of careless workmanship, improper practices, and the physical limitations of the actual structure itself. Nor does the laboratory "K" take into account the possibility of moisture impregnation, which would destroy the value of the insulation completely, or of packing, tearing and similar contingencies. It neglects, moreover, fire and vermin resistance, as it does disintegration, decay and rust, which latter can, in many cases, destroy the original properties as possessed under ideal conditions. The sponsors of Corkanstele feel that any of these failures is impossible with their method, due to the nature of the cork itself, and to the ease of supervision during construction.

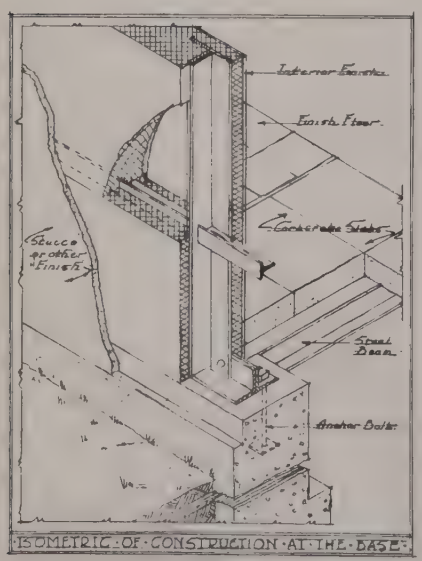
Beyond the field of pure contingency, however, they feel it has profound inherent advantages accruing from the method of application. This can best be understood by comparing its principles with those of the other consequential methods.

Sheet insulation may be applied to the entire exterior area of the walls and the roof, thus securing a complete coverage, but the insulating value of the sheet depends upon the thickness used, for thickness must be considered in all insulators, wherever or however employed. On the other hand, fill-in type of insulation, in the form of powder, sheets of thick masses, applied to the air spaces between the studs, only insulates the space so occupied. The insulating value, if any, of the frame itself, remains the same as before, and these members may occupy from 25 to 35 per cent of the total wall area. Thus, while the use of 3⅝″ of wooly or fibrous types of insulating material may indicate a theoretical rating as low as .072 (for K — .2614) to .080 (for K — .2961), such factors as area which can be treated, workman performance, and supervision, introduce uncertainties which heating engineers customarily cover in practice by allowances of 20 to 30 per cent for contingencies.

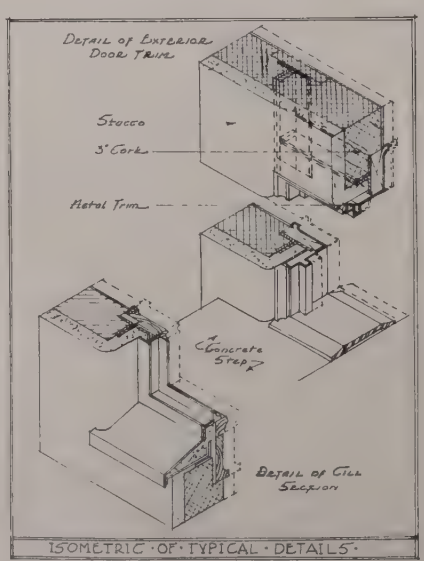
With Corkanstele, however, the manufacturers point out, the wall insulation is the wall fabric, itself. In other words, the insulation is the structure. It can never do otherwise than deliver its full efficiency, for if it is built, it is insulated.

While the method has but recently been made available commercially, it has been experimented with in residences over quite a term of years. Experience has shown that houses encased in the cork effect a fuel saving of as much as 60 per cent over neighboring dwellings. From this evidence, and from laboratory computations, the Corkanstele engineers recommend a 40 per cent reduction in heating plant capacity.

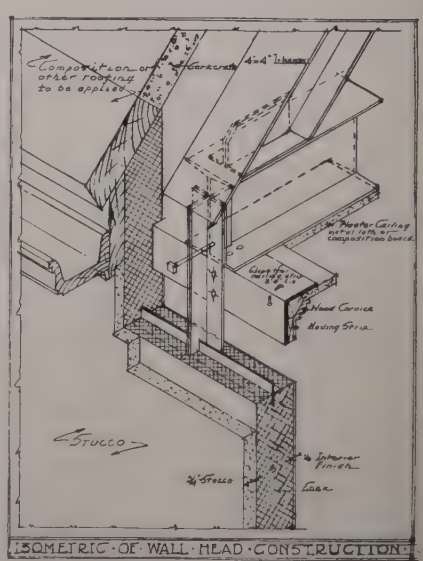
Corkanstele is termite-proof, sound-proof, fire-proof, lightning-proof, and practically tornado- and earthquake-proof, for two Corkanstele houses stood the big Florida wind of 1928 without revealing such minor injuries as cracked stucco. The erection goes ahead quickly, usually taking from five to ten days to complete the enclosure. This without corollary costs, for all building trades work as usual, with regular tools and accessories.



ISOMETRIC OF CONSTRUCTION AT THE BASE



ISOMETRIC OF TYPICAL DETAILS



ISOMETRIC OF WALL HEAD CONSTRUCTION

The site of the house, overlooking a vast stretch of rolling plains on one side and the Garden of the Gods and Pike's Peak on the other, is one of unusual beauty and grandeur

Photographs by Laura Gilpin

WILLIAM E. FISHER AND ARTHUR A. FISHER, ARCHITECTS

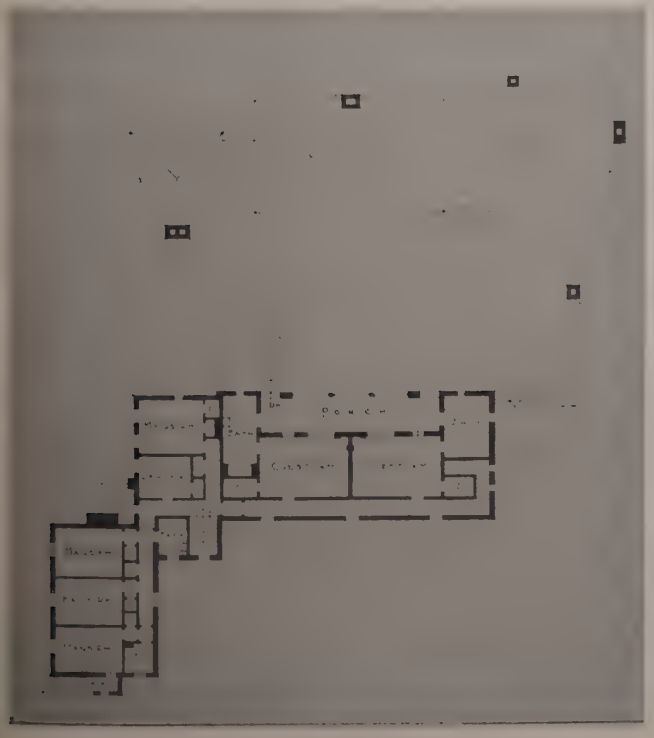
House of Donald N. Gilpin, Colorado Springs, Colo.

The entrance front. Walls have a warm glow, secured by adding a small quantity of red to the mix. For the roof, handmade terra-cotta tile are used, in variegated colors. The lower course, it will be noticed, overhangs the wall without any cornice members

As befits such a site, the house is spread out in avoidance of any feeling of constriction. Nevertheless the service, living and sleeping quarters are distinct unities grouped around the patio

HOUSE OF DONALD L. GILPIN, COLORADO SPRINGS, COLO. W. E. AND A. A. FISHER, ARCHITECTS

The entrance doorway, true to the chief characteristic of the simpler Spanish prototypes, in that what ornament is used is made to count by concentration against plain wall surfaces of great extent and assymetrical form



As in most houses of a widespread plan, the second floor is subordinate, but the architects have secured what must be a delightful effect in the pair of guest rooms behind a porch overlooking the patio

HOUSE OF DONALD L. GILPIN, COLORADO SPRINGS, COLO. W. E. AND A. A. FISHER, ARCHITECTS

In the living-room, as throughout the house, the walls are white and are kept relatively bare, with the result that each bit of wrought iron, carved wood, each painting and each arrangement of flowers sounds its full note

The patio is typical of the early Spanish missions of the Southwest, with its fruit trees, its potted plants, and its plash of water in a small basin level with the stone paving

HOUSE OF DONALD L. GILPIN, COLORADO SPRINGS, COLO. W. E. AND A. A. FISHER, ARCHITECTS

Again in the dining-room the white walls afford a pleasing foil for the inside shutters with carved panels, and for the heavy oak beams, which were painted by John E. Thompson

The patio is an additional living-room not only in summer but during many days in winter, since the sun shines in Colorado nearly every day of the year. Along one side the roof forms a typical "portale"

HOUSE OF DONALD L. GILPIN, COLORADO SPRINGS, COLO. W. E. AND A. A. FISHER, ARCHITECTS

In the library, Boardman Robinson has painted an amusing mural of Don Quixote in bright colors over the stone fireplace

From the oak shelving and tile floor of the library one gains a long view over the rolling plains through the horizontally emphasized steel casements and French doors

HOUSE OF DONALD L. GILPIN, COLORADO SPRINGS, COLO. W. E. AND A. A. FISHER, ARCHITECTS

This house was planned to fulfill the ideas and requirements of a family of three. Four years after it was built, the three-windowed dormer over the front entrance was added

IN THE SERIES OF
ONE HUNDRED SMALL HOUSES

"After eight years, this little house is being added to by the same owner, architect, and contractor; which tells the story of a happy experience in building. And all of us seem to be liking it more than ever."

JULIUS GREGORY, ARCHITECT

House of Hugh MacNair, Great Neck, Long Island

The house is of frame construction, with metal lath and a stucco made up of white cement and brown sand floated to a slightly rough texture. Such timbering as appears, and the outside trim, were adzed and stained a gray brown. The roof of wood shingles was stained a warm gray. Steel casements were painted a tone lighter than the trim

HOUSE OF HUGH MacNAIR
GREAT NECK, LONG ISLAND
JULIUS GREGORY, ARCHITECT

As stone is not native to this portion of Long Island, very little was used, and the foundation walls were built of cement blocks. The chimney is of common brick with a cement-plaster cap

The Reflecting Pool

Edwin Bateman Morris

IN connection with certain remarks I have let fall touching on the curious inadequacy of some of our modern condensed house-planning, Mr. Ralph Moreland Karger of Forest Hills Gardens, New York, writes in part:

It delights me to thoroughly, sincerely and respectfully disagree with you.

Your August article in ARCHITECTURE, which you mention in the December issue, played havoc with my metabolism and I shall tell you why.

A careful glance through the history of architecture reveals the fact that the worthwhile buildings were not the homes of the average citizen. . . . It is only within the last few centuries that residential construction began to materialize in the march towards social refinement and gracious living. . . .

But Today, and you and I are interested in Today, an awareness has finally penetrated the dull mind of man and he has discovered the tremendous social significance of home environment. . . .

Now you advocate a rambling house, a spacious house with plenty of room to stretch in and entertain in, with a place for the well combed young man to woo the daughter of the household, a place for Dad to fumble about in, privacy for the maid, the cat and the dog, and generally speaking, just oodles of space to play about and live in—and to hell with the modern gadgets and impedimenta. But, Mr. Morris, how about the 90 per cent, plus or minus, of the people who can only afford a forty-foot lot and a $4000 house? And you reply: let them cut out the electric dish-washer and the automatic hot water heater, the air conditioning and the oil-fired heating. Let them abandon their Fords and their garage and the extra bathroom, the mechanical refrigeration and the electric clothes washer. You blithely advocate that instead of employing these time-saving, labor-saving devices, these folks should put the money which would be spent on this equipment into the building of a larger house with more area to take care of and furnish and clean. Are the children of these households not as good as ours, that they may not enjoy the companionship and care of a mother who is not burdened with chores and fatigue? . . .

Regarding the architectural aspect—I love Frank J. Forster's houses and Julius Gregory's houses and others of that ilk. Contrary to your expectations I am not Moderne. My hair is thin ing and the backs of my ears are drier than they were. Nor am I a socialist or a communist—I am too comfortable for that. But a forty-foot lot is only a forty-foot lot and four thousand dollars is only four thousand dollars. It is not a question of the flat roof *versus* the good old pitched roof or the corner window *versus* the double-hung with muntins and a feeling of verticality. It is something vastly larger than that—it is a question of the architectural brains of our country meeting and coping with the social and economic facts of Today.

There is a question there—something to decide. I would not suggest that any one make himself uncomfortable. I like the oil-burners and electrical devices pretty well myself.

But there are two things in a home, the physical comforts and the spiritual comforts. I happened to say to a certain lady at dinner the other night that my children were a comfort to me. And she replied with considerable feeling: "You are indeed fortunate. Not every one can say that." One of the reasons they are a comfort is because they had a home to grow up in.

They did not have to visit with their companions in corner drug stores, in parked automobiles, and in road houses. Any one who can say, "My children's lives have been ruined, but I have had my oil-burner and air-conditioner"—he is the person who should have, by all means, an oil-burner and an air-conditioner.

I do not wish to enter into a controversy with Mr. Karger, whose honest conviction on his side of the question is apparent. The subject is too important for mere forensics.

Yet I trust I may say that ease and comfort, precious though they are, are not of real value if the price paid for them is too great. I trust I may say that a man's debt to the present generation requires him to have intellectual intercourse with friends. That mellows and continues the culture of which we are so proud. His debt to the next generation requires him properly to rear the children who by grace of God come and grow under his roof.

Since time was, the urge of civilization has been to pay too great a price for ease and comfort. You remember how the Ark of the Covenant was carried at first on human shoulders and was always a responsibility and an example to men. And then when its burden became too great it was placed on a cart, where it was no longer a care—and men forgot about it.

If the house-buying public fully realizes that the extra percentage that goes into the electrical and mechanical contrivances of a house (which carry a large depreciation and upkeep charge) would provide facilities for civilized living; and knowing that, deliberately chooses the contrivances, I have no fault to find.

But one buys a house—two buy a house, perhaps I should say—when the family is young. There are no children or the children are very little. The house, to their inexperienced eyes, appears adequate and easy. It is not until later that distracted parents wonder what is to be done.

I say again, therefore, that the responsibility of an architect in this case is a social one. The greatest value of an architect anyway is to pass on the benefit of experience to those who have not had experience. He has the responsibility of providing for exigencies he knows will come which novices would forget to take into account.

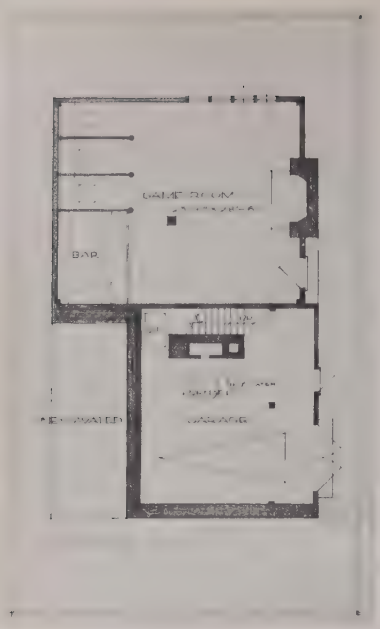
Therefore the architect who plans a house that does not provide for the civilized responsibilities of its occupants has not fully lived up to his Hippocratic oath.

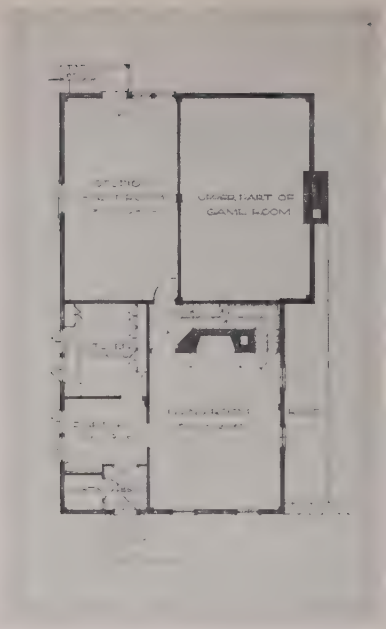
I do not point a finger of scorn at an inexpensive house. I have lived in one all my life. As an architect, and an almost fanatic worshipper of my profession, I am hurt at a house plan which is under-adequate as to proper spaces and over-adequate as to mechanical equipment, when the cost of the one would have furnished funds for the other, or, at least, part of the cost of the one furnished funds for part of the other.

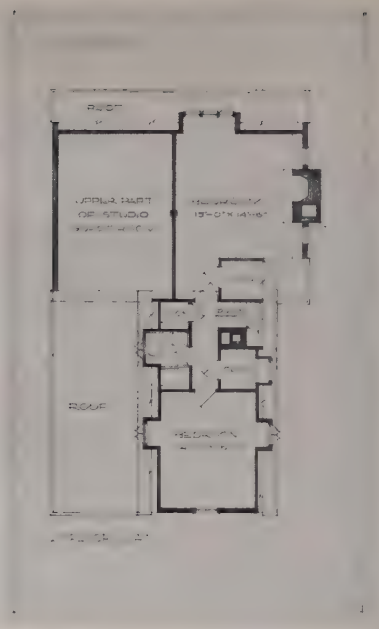
I should like to see it laid down as a rule that if it is a question of either the automobile or the children being forced out from under the roof-tree, it will not be the children.

I should like to see house plans which would provide a space for children to grow up under kindly eyes. Throw out the automobile, if something must be excluded. Duco finish will stand exposure far better than young hearts.

While writing this a young woman comes who runs a nursery school, a place where they teach very little children to play who have no place to play at home. In other words, we are having to develop community institutions in an endeavor to make up for the deficiencies in the architectural planning of homes.







Guest House of William Burnham, Weston, Conn.

SCOTT & TEEGEN, ARCHITECTS

ADJOINING a large old Colonial farmhouse on the estate recently acquired by William Burnham near Weston, Conn., were several barns and sheds, for many years unused and hence in bad repair. While the owner was restoring and building an addition to the farmhouse, he decided to make the barn nearest the house into guest quarters, and a portion of it into a general entertainment room of ample proportions. This barn was in reality two, at right angles to each other, the smaller being at a slightly higher level than the larger. The smaller had been used as a tool room, with a hay loft above and a space for storing farm machinery below, whereas the larger barn had contained horse stalls, wagon space and a hay loft over.

Observation revealed that the framework of hand-hewn oak timbers, dowelled together with wooden pegs, was in excellent condition. Due to insufficient wind-bracing, the

At left, the two barns as they appeared at the beginning of alterations; at right, the finished job, with, in the foreground, the outside stairway to the guest room

building had canted out of shape, but the whole framework was so thoroughly knit together that it was easily pulled back into its original position as a complete unit, without replacing or restoring any of the important structural elements. The foundation walls, two feet thick, were of random field stone, laid up dry.

etc., were obtained directly from the mill catalog. The stone for the fireplaces and chimneys was picked up from the adjoining fields. The body of the house was painted white with green shutters, and the rest in the familiar Connecticut red.

Plans were ultimately developed as shown in the illustrations. The lean-to beside the tool house, formerly used as an enclosure for the family buggy, became the entrance vestibule, dining-room and kitchen. The tool house became the living-room, with a generous fireplace at one end. To one side of the fireplace a passage was cut through to the large barn, and a studio which is at an elevation corresponding to the mezzanine of the game room, placed

Before, during, and after the alterations, as viewed from the same corner. The barns at the start were none too promising in appearance, but the framework was in excellent condition

In the alteration of the succeeding work little of the lumber constituting the original structure was eliminated. The old sheathing, rafter beams and flooring were kept; then holes cut for the dormers and chimneys; and a new shingle roof to cover the whole. A new top flooring of pine was laid over the old floor, and all window frames, doors, trim,

Due to a lack of proper wind-bracing, and partly also to the dry-wall foundation, the barns were decidedly out of true, but they were pulled back to the vertical without great difficulty

there. The height of this room extends to the roof and thus includes part of the larger barn's hay loft. At the other side of the fireplace a winding staircase leads to the second floor quarters where four dormers and a window at the gable end were added to the hay loft to assure light for a small bedroom, a bath and two closets. Another and larger bedroom was provided by cutting through to the hay loft of the larger barn and lighting it by a large dormer at one side and two lunettes at one end.

The space formerly occupied by the horses and wagon storage became the game room. Here, except for the addition of a large fireplace, a new entrance from the lower level, and a row of windows at one side, everything was left in its original state. The horse stalls became small alcoves in which groups could carry on their own private conversations, and one corner begged to be made into a bar. Fifty people can circulate in this space without any difficulty.

The cellar, with its furnace, hot-water heater and oil storage, was placed in the already excavated area under the tool house. This also serves as a garage for one car, and can be approached by stairs from the living-room.

The finished result as seen from nearly the same view-point as had been assumed in making the preliminary perspective on page 232

NUMBER 114

IN A SERIES OF COLLECTIONS OF PHOTOGRAPHS
ILLUSTRATING VARIOUS MINOR ARCHITECTURAL DETAILS

ARCHITECTURE'S PORTFOLIO OF GOTHIC BUTTRESSES

Subjects of previous portfolios are listed below at left and right of page

1926
- DORMER WINDOWS
- SHUTTERS AND BLINDS

1927
- ENGLISH PANELLING
- GEORGIAN STAIRWAYS
- STONE MASONRY TEXTURES
- ENGLISH CHIMNEYS
- FANLIGHTS AND OVERDOORS
- TEXTURES OF BRICKWORK
- IRON RAILINGS
- DOOR HARDWARE
- PALLADIAN MOTIVES
- GABLE ENDS
- COLONIAL TOP-RAILINGS
- CIRCULAR AND OVAL WINDOWS

1928
- BUILT-IN BOOKCASES
- CHIMNEY TOPS
- DOOR HOODS
- BAY WINDOWS
- CUPOLAS
- GARDEN GATES
- STAIR ENDS
- BALCONIES
- GARDEN WALLS
- ARCADES
- PLASTER CEILINGS
- CORNICES OF WOOD

1929
- DOORWAY LIGHTING
- ENGLISH FIREPLACES
- GATE-POST TOPS
- GARDEN STEPS
- RAIN LEADER HEADS
- GARDEN POOLS
- QUOINS
- INTERIOR PAVING
- BELT COURSES
- KEYSTONES
- AIDS TO FENESTRATION
- BALUSTRADES

1930
- SPANDRELS
- CHANCEL FURNITURE
- BUSINESS BUILDING ENTRANCES
- GARDEN SHELTERS
- ELEVATOR DOORS
- ENTRANCE PORCHES
- PATIOS
- TREILLAGE
- FLAGPOLE HOLDERS
- CASEMENT WINDOWS
- FENCES OF WOOD
- GOTHIC DOORWAYS

Below are the subjects of forthcoming Portfolios

Corner Windows
MAY

Self-supporting Stairways
JUNE

Window Heads
(INTERIOR)
JULY

Garden Enclosures
AUGUST

Church Lighting Fixtures
SEPTEMBER

Oriel Windows
OCTOBER

Photographs showing interesting examples under any of these headings will be welcomed by the Editor, though it should be noted that these respective issues are made up about six weeks in advance of publication date

1931
- BANKING-ROOM CHECK DESKS
- SECOND-STORY PORCHES
- TOWER CLOCKS
- ALTARS
- GARAGE DOORS
- MAIL-CHUTE BOXES

1931—*Continued*
- WEATHER-VANES
- BANK ENTRANCES
- URNS
- WINDOW GRILLES
- CHINA CUPBOARDS
- PARAPETS

1932
- RADIATOR ENCLOSURES
- INTERIOR CLOCKS
- OUTSIDE STAIRWAYS
- LEADED GLASS MEDALLIONS
- EXTERIOR DOORS OF WOOD
- METAL FENCES
- HANGING SIGNS
- WOOD CEILINGS
- MARQUISES
- WALL SHEATHING
- FRENCH STONEWORK
- OVER-MANTEL TREATMENTS

1933
- BANK SCREENS
- INTERIOR DOORS
- METAL STAIR RAILINGS
- VERANDAS
- THE EAGLE IN SCULPTURE
- EAVES RETURNS ON MASONRY GABLES
- EXTERIOR LETTERING
- ENTRANCE DRIVEWAYS
- CORBELS
- PEW ENDS
- GOTHIC NICHES
- CURTAIN TREATMENT AT WINDOWS

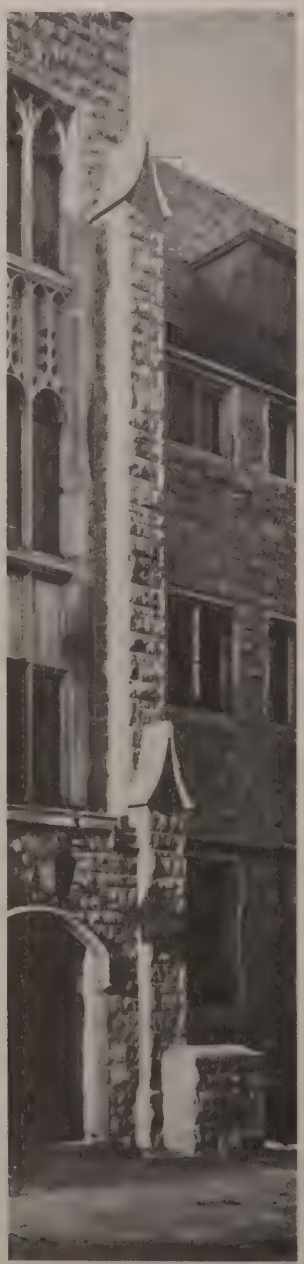
1934
- EXTERIOR PLASTERWORK
- CHURCH DOORS
- FOUNTAINS
- MODERN ORNAMENT
- RUSTICATION
- ORGAN CASES
- GARDEN FURNITURE
- WINDOW HEADS, EXTERIOR
- SPIRES
- BUSINESS BUILDING LOBBIES
- ROOF TRUSSES
- MODERN LIGHTING FIXTURES

1935
- CIRCULAR WINDOWS (GOTHIC AND ROMANESQUE)
- TILE ROOFS
- MOLDED BRICK
- DORMER WINDOWS
- ENTRANCE SEATS
- OVERDOORS, INTERIOR
- BRICK CORNICES
- SIGNS
- CHIMNEY OFFSETS
- WINDOW HEADS (EXTERIOR, ARCHED)
- UNUSUAL BRICKWORK
- SHUTTERS AND BLINDS

1936
- FIREPLACES (MEDITERRANEAN TYPES)
- PEDIMENTS (EXTERIOR)
- BALCONY RAILINGS (INTERIOR)

St. Patrick's Cathedral,
New York City
James Renwick

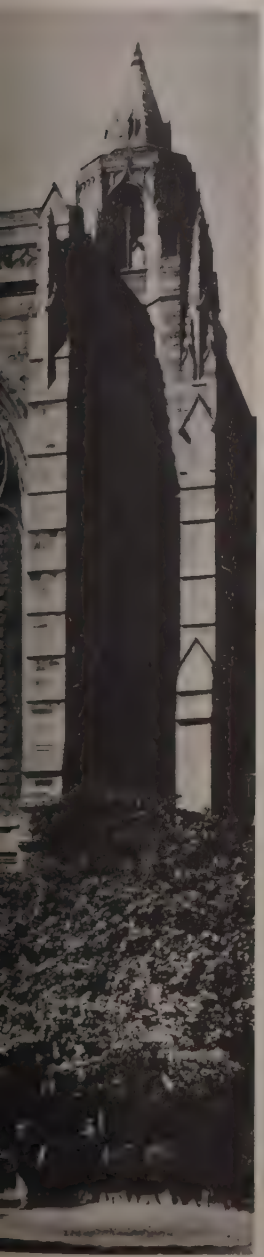
Augustinian Monastery,
Villanova College,
Villanova, Pa.
Henry D. Dagit & Sons



St. Michael's Church,
Litchfield, Conn.
Rossiter & Müller

St. Madeleine Sophie's
Chapel,
Germantown, Pa.
Henry D. Dagit & Sons

Liverpool Cathedral
Sir Giles Gilbert Scott



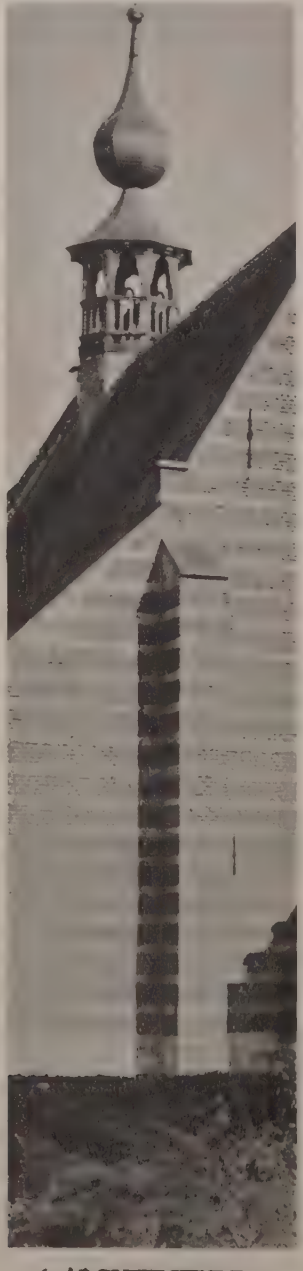
Church of the Heavenly Rest, New York City
Mayers, Murray & Phillip

St. Hugh Rectory, Philadelphia, Pa.
Henry D. Dagit & Sons

Library, Fordham University, New York City
Emile G. Perrot

The Riverside Church,
New York City
Henry C. Pelton;
Allen & Collens

Church at Herenthals,
near Antwerp, Belgium



Church Tower, Campden
House,
Chipping Campden,
Gloucestershire

First Baptist Church,
Cleveland, Ohio
Walker & Weeks

Municipal Building,
Larchmont, N. Y.
Frank A. Moore

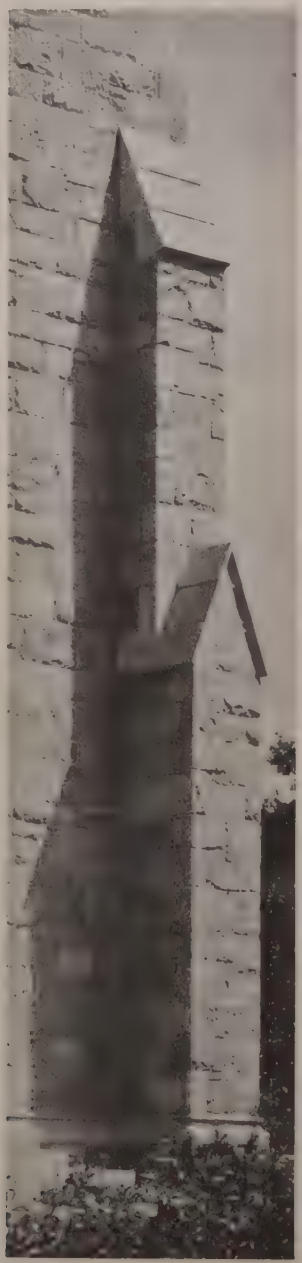
Kent School, Kent, Conn.
Roger H. Bullard;
Arthur Loomis Harmon

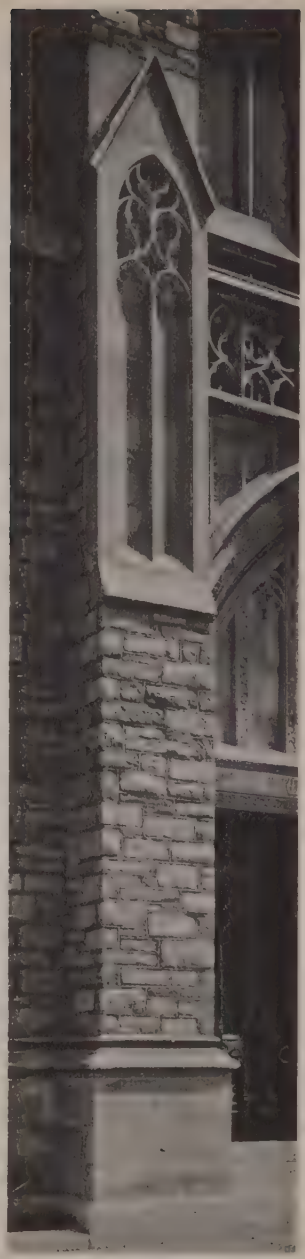
Church at Greipenberg,
Germany

Grace Church,
New York City
James Renwick

Our Lady of Sorrows Church,
South Orange, N. J.
Maginnis & Walsh

St. Paul's Church,
Yonkers, N. Y.
Cram & Ferguson





Park Avenue Baptist Church,
New York City
Henry C. Pelton;
Allen & Collens

Kent School, Kent, Con
Roger H. Bullard;
Arthur Loomis Harmon

Collegiate Chapel of St. Andrew's, Philadelphia, Pa. Zantzinger, Borie & Medary

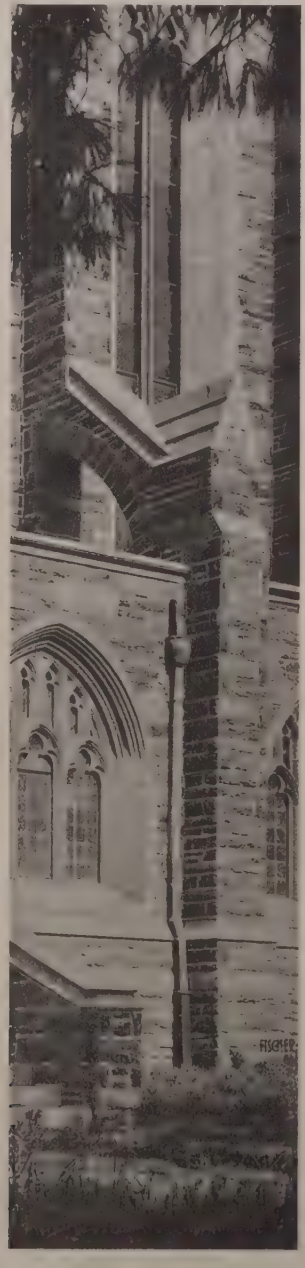
The Riverside Church, New York City Henry C. Pelton; Allen & Collens

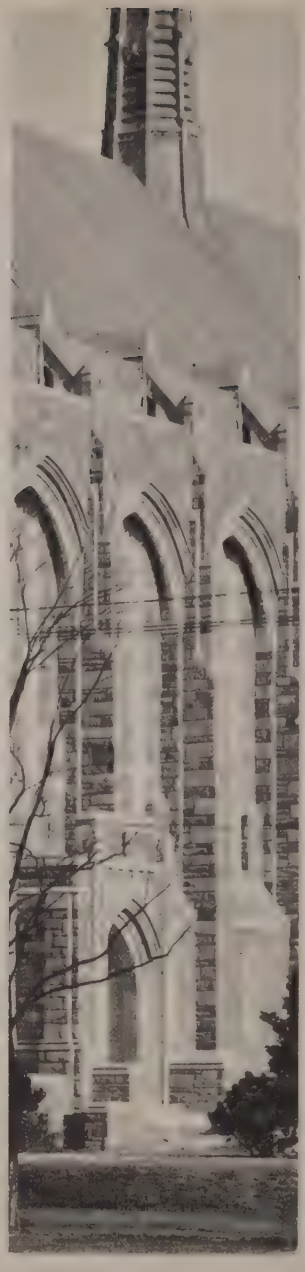
First Presbyterian Church, Kalamazoo, Mich. Charles Z. Klauder

Park Avenue Baptist Church, New York City Henry C. Pelton; Allen & Collens

Cathedral of St. John the Divine, New York City
Cram & Ferguson

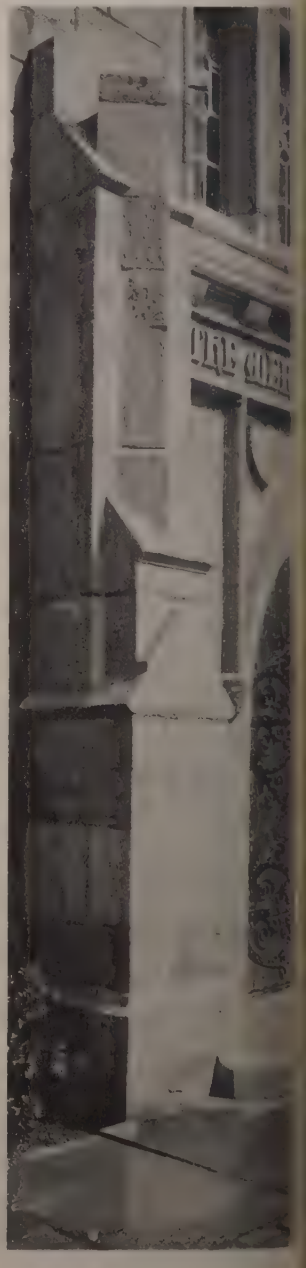
Collegiate Chapel of St. Andrew's, Philadelphia, Pa.
Zantzinger, Borie & Medary



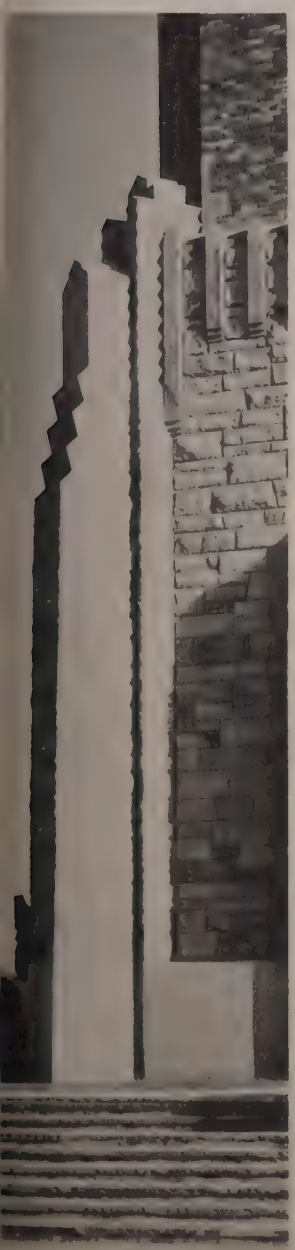


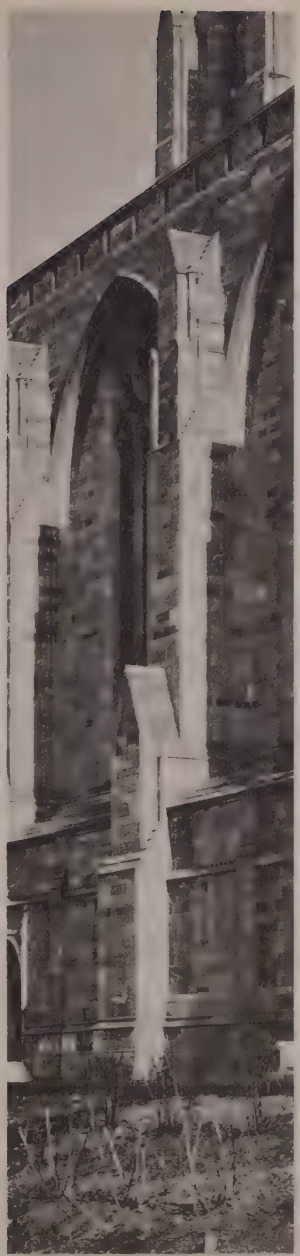
Metropolitan Memorial Methodist Episcopal Church, Washington, D. C.
Sundt & Wenner; Bureau of Architecture, M. E. Church, Advisory

Merion War Tribute House, Merion, Pa.
Walter T. Karcher & Livingston Smith



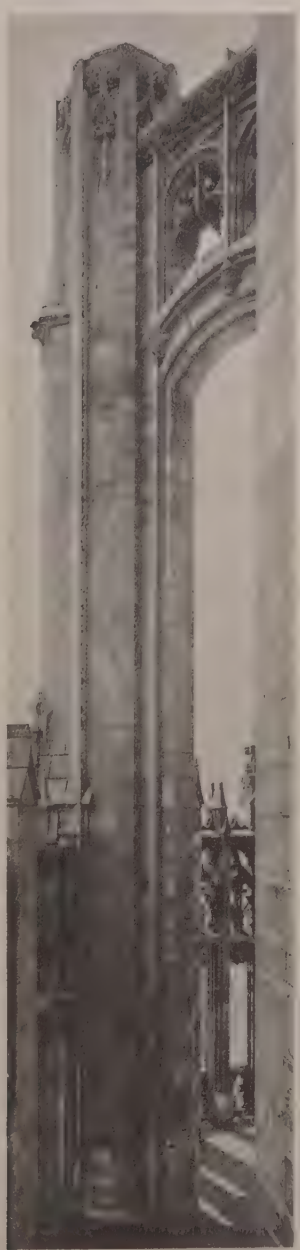
Tower, Jones Beach State Park, Long Island, N. Y. L. I. State Park Commission; H. A. Magoon





University of Chicago Chapel, Chicago, Ill. Bertram G. Goodhue; Bertram G. Goodhue Associates

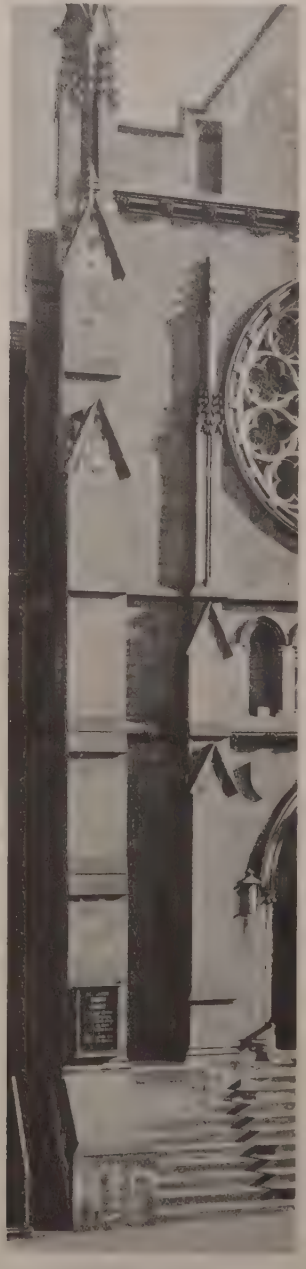
Chicago Tribune Tower, Chicago, Ill. John Mead Howells; Raymond M. Hood



Cathedral of St. Peter and St. Paul, Washington, D. C. Frohman, Robb & Little

Bryn Mawr Presbyterian Church, Bryn Mawr, Pa. Walter T. Karcher & Livingston Smith

St. James Protestant Episcopal Church, New York City Robertson & Potter



Lawyers' Club, University of Michigan Ann Arbor, Mich. York & Sawyer

St. Luke's Evangelical Lutheran Church, New York City Edward L. Tilton; Alfred M. Githens

Collegiate Chapel of St. Andrew's, Philadelphia, Pa. Zantzinger, Borie & Medary

© Wurts Brothers, N. Y. C.

St. Thomas's Church New York City Cram, Goodhue & Ferguson

Liverpool Cathedral Sir Giles Gilbert Scott

Harkness Tower, Yale University, New Haven, Conn. James Gamble Rogers

Columbia High School,
South Orange, N. J.
Guilbert & Betelle

White Plains High School,
White Plains, N. Y.
Starrett & Van Vleck

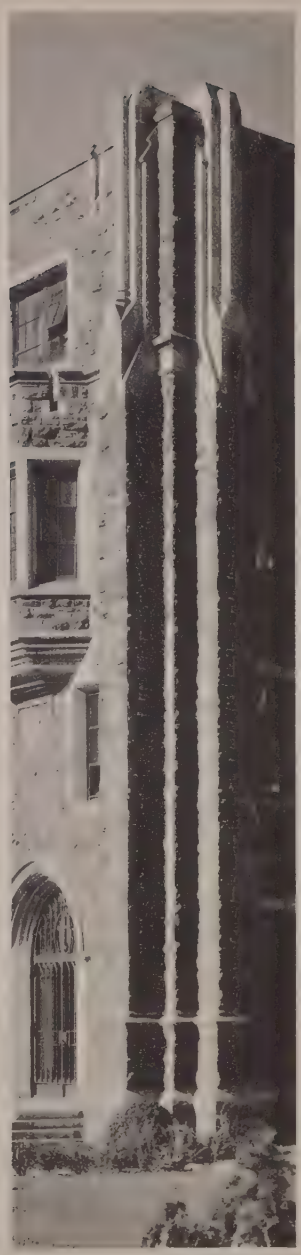
Harkness Quadrangle,
Yale University,
New Haven, Conn.
James Gamble Rogers

Sterling Chemistry
Laboratory,
Yale University,
New Haven, Conn.
Delano & Aldrich

Hospital,
Duke University,
Durham, N. C.
Horace Trumbauer

H. B. Fine Hall,
Princeton University,
Princeton, N. J.
Charles Z. Klauder

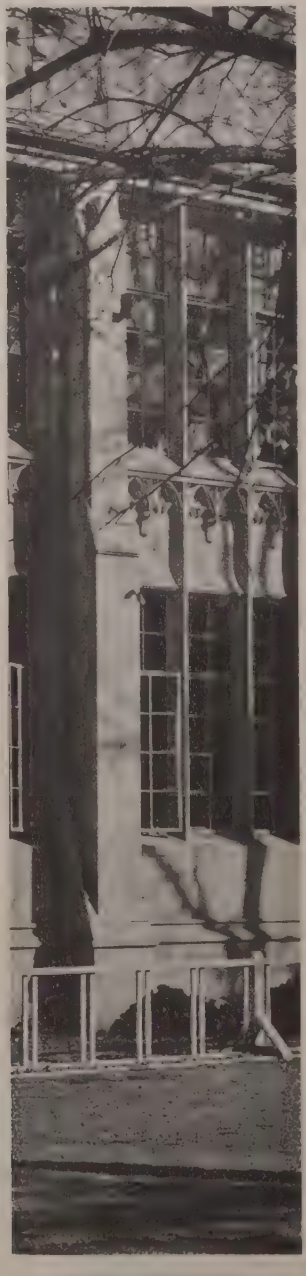
Holy Cross Church,
Germantown, Pa.
Henry D. Dagit & Sons

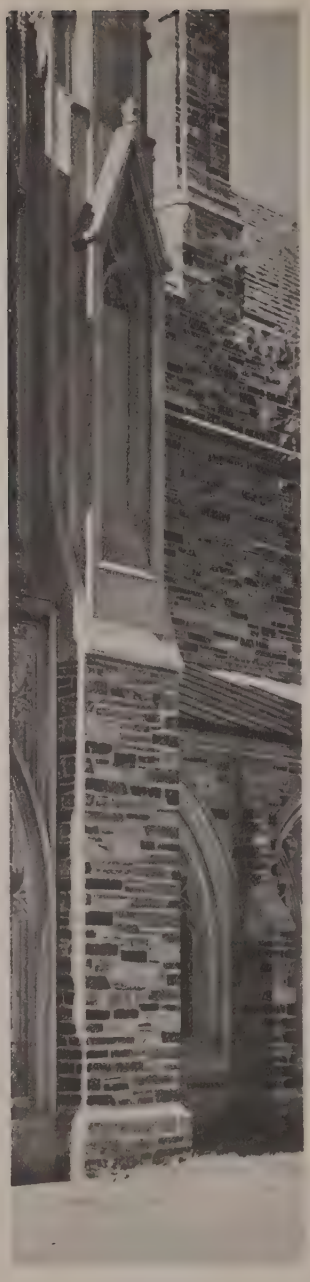


Press Building,
Messenger of the
Sacred Heart,
Fordham, N. Y.
Robert J. Reiley

Church of Notre Dame,
Louviers, Normandy,
France

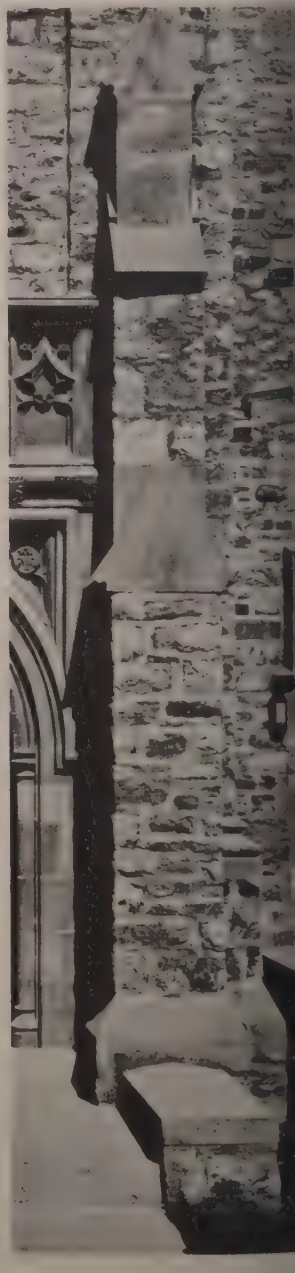
Dickinson Hall,
Princeton University,
Princeton, N. J.
Charles Z. Klauder





Holder Hall,
Princeton University,
Princeton, N. J.
Day & Klauder

Blanchard Chapel,
First Presbyterian
Church,
Passaic, N. J.
Harry Leslie Walker



Park Avenue Baptist, Church, New York City Henry C. Pelton; Allen & Collens

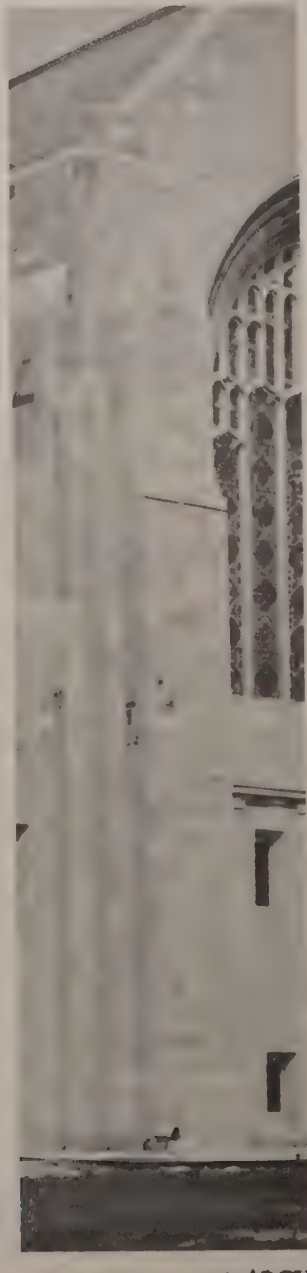
Kitchen Building, Princeton Dining Halls, Princeton, N. J. Day & Klauder

O. H. P. Belmont Mausoleum Woodlawn Cemetery, N. Y. Hunt & Hunt

Church of St. Peter and St. Paul, The Bronx, New York City Robert J. Reiley

South Madison Hall,
Princeton University,
Princeton, N. J.
Day & Klauder

First Baptist Church,
Cleveland, Ohio
Walker & Weeks



Lawyers' Club,
University of Michigan,
Ann Arbor, Mich.
York & Sawyer

Sophomore Clubhouse,
Princeton University,
Princeton, N. J.
Day & Klauder

DESIGN *in* MATERIALS

A DEPARTMENT DEVOTED TO A BETTER LIAISON BETWEEN THOSE WHO ARE DESIGNING THE NEW AMERICA AND THOSE WHO ARE PRODUCING THE MATERIALS WITH WHICH IT IS TO BE REBUILT

WHEN WE BUILD AGAIN

KENNETH M. MURCHISON HAS SOME VIEWS ABOUT APARTMENT-HOUSE PLANNING AND GADGETS, AS EXPRESSED TO THE APARTMENT-HOUSE GROUP OF THE BUILDING-MANAGEMENT DIVISION

KENNETH M. MURCHISON, one-time architect, all-time philosopher, present-time banker, thinks that apartments are going to make a right-about-face now that construction is getting under way again. It's a matter of sales resistance, for talking to connoisseurs of rentability about dropped living-rooms, electric kitchens, and cross ventilation, is like a ramble through faded pastures. All of which looks to us as though he meant that what we need is a nice new model every year, with done-over streamlining, just like the motor-cars have. We think that it may be pretty tough on the bankers, but if they don't mind, we shouldn't. In fact, the profession should like it quite a lot. Anyway, Mr. Murchison goes on to say that the bed that pops out of walls, the bookcase that turns from fairy tales to cocktails, and metal furniture that does not have to be polished, are all old stuff, too.

Some one has to be really creative about the situation, apparently. Murchison suggests "windows which do not have to be washed, hot water which is not too hot or too cold, an electric range which will heat up as quickly as a gas range, and an electric percolator which will perk coffee in five minutes instead of ten for those who have to be at the office before 9 A.M.—as savings bankers have to be.

"Apartments of the future must have no waste space, and almost every room should have a double purpose. If there are girls in the family old enough to have beaux their room should be a sitting-room until the curfew rings at 10.45; then a sweet-toned alarm will sound, something like that of a dining-car, the beaux will go out into the silent night, and the sitting-room becomes the children's bedroom.

"There should be no apartments on the first and second floors of any apartment house of the future, unless rubber-tired ash cans are in universal use. This space will be given over to shops in front, and to garages in the rear. . . . The higher up the apartments commence, the better it is for all concerned."

He holds little hope for the future of built-in furniture, for he says that "most of it is awkward architecture, and ofttimes in the wrong place. Nothing is much worse than a built-in Pullman arrangement in the kitchen for eating purposes, unless they have a motion picture go by the window so that you will think the train is just getting into Ithaca.

"We are at last to have air-conditioning in an apartment house. At 400 Park Avenue, the New York Central is going to revamp the apartments with all sorts of streamlined, double-track ideas. They will probably have the cook scoop up water as she goes from the dining-room to the kitchen, as the Twentieth Century does between Albany and Buffalo, and when the meal is ready, she will undoubtedly drop a semaphore signal to indicate that the track is clear.

"Other railroad ideas might be very apropos, such as having the maid call out, 'All aboard on Track 3 for Baltimore, Washington, and all points south.' This would indicate chicken for dinner.

"If the family were eating too fast, she could blow two long and two short blasts on a whistle, to indicate 'slow down.' She could bring the food in in one of the electric baggage trucks, of a smaller and more beautiful design than we see at present, and the New York Central could advertise these apartments as 'The Water Level Route to Park Avenue.'

"Everybody in the sheet-metal business is trying to get out new designs and space-saving kitchen equipment and, even if you have no kitchen, they have an answer for that. A few days ago I saw a new contraption built on the theory that you don't have to wash, but you've got to eat; a metal kitchenette that fits right over the bathtub and which is permanently left in place—so you can't possibly take a bath.

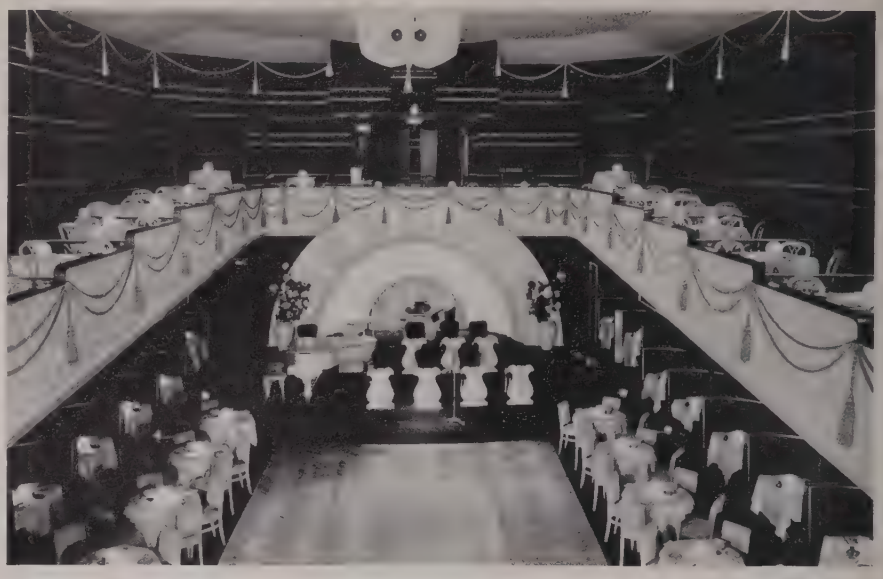
"What they missed was fixing their outfit so you could take a bath while the breakfast was cooking, right over your head. In fact, with a few changes in design, you could eat while bathing and thereby save ten minutes.

"One man's guess is as good as another's. Apartments of the future will have to be air-conditioned. The planning of apartments, though, cannot be materially improved upon. Just when renting conditions will warrant our builders in putting up large and expensive structures again, is still a question. But things are coming back, definitely, and before long it is the hope of every one that our antiquated structures will be demolished and new buildings, beautifully ventilated and illuminated, will be filled with tenants eager to live in the most modern habitation possible and, moreover, able to pay adequate rents for them."

Thank you very much, Mr. Murchison.

New Thyratron-Tube-Reactor Dimming Equipment

LIGHT, as a decorative element, continues to develop in importance under the stimulus of constant research. Its potentialities are enormous, and each new discovery opens up wide vistas of possibilities. "Omar's Dome," a recently completed restaurant in Los Angeles, by Pruitt & Brown, architects, makes effective use of a new feedback circuit in the interior scheme, which permits of a novel flexibility in color flooding and lighting intensity. The system is similar to the one now used in a number of the country's foremost theatres, but it is the first installation applied to the requirements of a restaurant.



The principle involved depends upon the development of the Thyratron tube, which may be considered as a controlled rectifier and amplifier operating independently of moving contacts, brushes, etc. With the aid of a saturable-core reactor, which in effect is a magnetic type of amplifier, it permits a smooth control voltage to regulate and produce gradual changes in the relatively heavy flow of current to the lighting circuit.

The equipment in the restaurant is used in connection with five light circuits, one for the table fixtures, three for the colored balcony spotlights, and a fifth for the ceiling lights. These five circuits are controlled by means of four electron-tube panels, each of which is operated with two push-buttons mounted on a switch plate and located at a convenient point in the restaurant, where the effects produced may be observed. Pressing one of the buttons decreases the intensity of the lights on the circuit connected to the panel, while the other is used to increase the intensity.

The system provides a number of advantages, chief of which are: (1) a very high efficiency over the required dimming range, because energy is not dissipated as heat from resistors; (2) a freedom of moving parts carrying load circuit; (3) an absence of flickering lights, transition from one intensity to another being gradual; (4) an all-electric operation minimizing noise, promoting long life and permitting remote control.

A New Type of Shingle

A NEW type of cement-coated asphalt shingle is about to be announced by the leading manufacturers of roofing material.

These shingles, which will be known generically as cementop shingles, are the result of a special processing method developed by the Bakelite organization. By the new process conventional asphalt shingles are given an extra surface coating of special formula hydraulic cement in which mineral oxide pigments are incorporated.

Cementop shingles have several distinctive advantages over ordinary asphalt shingles. The cement coating provides a vehicle for the incorporation of a variety of permanent colors which could not be had heretofore. These colors include white, blues, greens, grays, reds, and black. A white siding material, so long needed, is now available. Of snow white, heat-reflecting cement, it fills a need for the Colonial type house.

In addition to yielding a very attractive roofing and siding material, the cement coating gives the shingles rigidity. It acts as a shield protecting the asphalt beneath from the rays of the sun. It seals the asphalt so effectively that tropical heat will not bake out the oils and other volatile elements present in asphalt shingles. These shingles also have better fire resistance, greater resistance to erosion, and greater insulation value.

Because the cement coating imparts rigidity, it is possible to expose a greater portion of each shingle butt. This, of course, means that fewer shingles are required to cover a given area. As a matter of fact, where an ordinary asphalt shingle can be exposed 5 inches, the cementop can be exposed 7 inches.

Those roofing manufacturers who have started production on the new cementop shingles, or will within the next few weeks, are: The Johns-Manville Corporation, The Ruberoid Company, McHenry-Millhouse Mfg. Company of New York, Inc., American Asphalt Roof Corporation, Amalgamated Roofing Company, and the Los Angeles Paper Manufacturing Company.

IMPROVING THE BUILDING INDUSTRY

By Rolland J. Hamilton

President, American Radiator Company

WITH this large subject, I must necessarily confine myself to a few observations as to what our industry has learned or should have learned during the depression.

If my Latin holds good, the word constructive means "build together." If we are to have constructive policies in the building industry, doesn't that automatically mean that the various groups — architects, engineers, contractors, material men, labor, finance—must be more firmly bound together than at present and must attain a better group consciousness with all that this implies? So marked is this lack of unity that frequently it is denied that these component elements constitute an industry within the true meaning of that term. In any event our unmistakable duty lies in encouraging better understanding between these groups.

All of us have learned conclusively that the law of action and equal reaction is just as applicable to the building industry as it is to the stock market. It is perhaps not just a coincidence that by the end of 1932 building as a whole showed a decline from its peak of approximately the same percentage as the average of industrial common stocks. I have been in the building industry practically all my life and never expected to see that situation. That it has happened indicates that at least some of the factors of psychology and of excess that ruled a few years ago in the stock market must have had their counterparts in the building industry.

Let's face facts. Will we do differently the next time? Many will, but it is the duty and self-interest of most of us to exert every influence at our command to direct otherwise. Did you, as an architect, a contractor, an engineer, or a material man, go past the reasonable bounds of good business in encouraging construction that was not needed or which you knew was wrongly designed, or located in an obviously unfit place, or was built poorly to come within prescribed limits of price? Did the labor unions jack up wage scales to the highest possible level regardless of future effects on the building enterprise? Did finance wink at overvaluations in order to get the business at a higher commission? The building industry should be a conservative line of endeavor and not a get-rich-quick scheme.

In thinking and planning for the future, let us not forget the small home and the low-priced apartment. Fifty-nine and four-tenths per cent of all building construction, in terms of square feet of floor space in 1928, was residential, and the greater portion of this was small residences or moderate-priced apartments. I am convinced that this class of work deserves more attention from the industry than it has had. Who has been doing this class of work? You know as well as I do. Is it not worthy of more attention from good architects, from responsible contractors, and from the highest class financial houses? If I were to attempt just one prophecy, it would be that the moderate-priced single-family dwelling is going to be a bigger factor in the building industry during the next cycle than ever before, and moderate-priced, good multiple-story housing will be a close second.

Having pulled through this far, we should not get discouraged now or lose faith in our industry. We are facing a tremendous pent-up demand, especially for residential construction. It is beyond all question that never in history was there more demand for better living accommodations than at this very moment. I am optimistic enough to believe that within the next few years we shall see building construction beyond anything ever before witnessed.

It may be along different lines or with materials and methods differing from our preconceived notions. One cannot visualize the motor car of 1940, nor the materials, design, or mechanical equipment of buildings ten years hence, but my appeal is to have faith and the willingness to back it up by an open-minded preparedness to accept new ideas—ideas weighed not in the scales of our conventionalized ideas or selfish desires, but in concord with public demand and public service.

FIRE-RETARDING WOOD

THE development of fireproof building methods is gradually eliminating the fire hazard in modern construction. But fire continues to reap an appalling annual harvest which, during the period of 1935, amounted to 10,000 lives and $245,000,000 in property in this country alone. Just what proportion of this loss occurred in fire-resisting structures, it is difficult to ascertain, but the principle fuel consumed was wood, man's most universal building material.

The obvious method for preventing large losses of this kind would be to limit the amount of available fuel at the point of origin of the fire. This could be accomplished by the extensive use of fire-retarding and incombustible materials, but investigation has shown that the majority of fires have their inception in the interior of the structure, where wood continues to be the most adaptable and serviceable material available for many purposes. The solution, therefore, must inevitably depend upon the discovery of either a synthetic substitute for wood, which

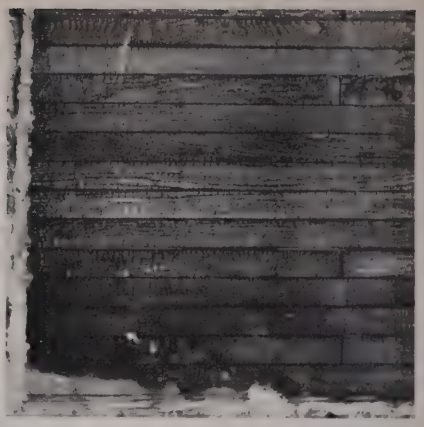
not only possesses its desirable qualities but is fire retarding, or a method of rendering the actual material fireproof.

This latter goal has attracted the attention of men of science for centuries. As early as 400 B.C. Æneas suggested soaking lumber in vinegar, whilst others have tried coating it with clay, washing it with mineral salts, and painting it with various metallic paints to develop a resistance against fire. Practically every conceivable method has been tried, from treating it with chemicals to charring it with fire, but the results in the past have been, at best, only partially successful or have changed the character of the wood in such a way as to impair its usefulness.

Modern science, however, has recently contributed a method which promises to fireproof the material permanently without affecting its workability or appearance. The process consists of impregnating the lumber with incombustible salts, and is effected by a method similar to that used in the treatment of wood with creosote for protection against decay. The technique, however, is exacting, for its success depends upon getting just the right amount of the salts into the wood, as a greater or a less amount fails to give the desired results.

The Underwriters' Laboratories have recently subjected the process to exhaustive tests to ascertain the extent to which the producer has been successful in decreasing the combustibility of the lumber by means of the chemical treatment, and to provide a basis for an opinion as to whether the treated product is likely to regain its original combustibility fully, or to a significant degree, during its useful life in service.

Red oak, not treated; exposed face when withdrawn from furnace



Red oak, treated; exposed face when withdrawn from furnace

For this purpose, fireproofed specimens of red oak and maple were selected and subjected to fire tests of various kinds for investigation of their susceptibility to ignition, their tendency to encourage spread of flame, and their contribution of fuel to an attacking fire. As an aid to judging the significance of the results, similar fire tests were conducted upon specimens of untreated commercial lumber.

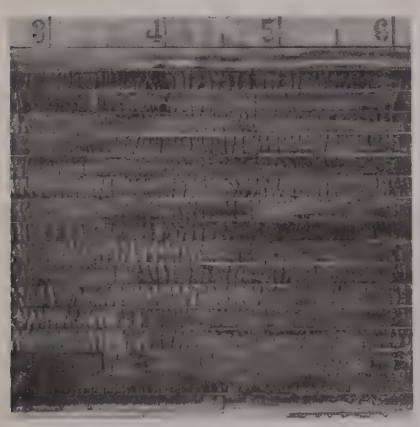
Whole floors, constructed of both types of wood, were subjected to a roaring inferno, in gas-fired furnaces especially designed for such work. The behavior of both types under fire was observed through windows, and compared by one group of engineers, while a hundred feet away a second group recorded the temperatures of the floors by means of meters connected with thermocouples.

The fireproofed floors came from the furnace at the completion of the tests like a phœnix rising from the flames—blackened and charred on the exposed surface, but intact and sound, having stood as a barrier against the fire and prevented its passage. The untreated floors, however, ignited and, on completion of the tests, were burning on both the exposed and unexposed surfaces.

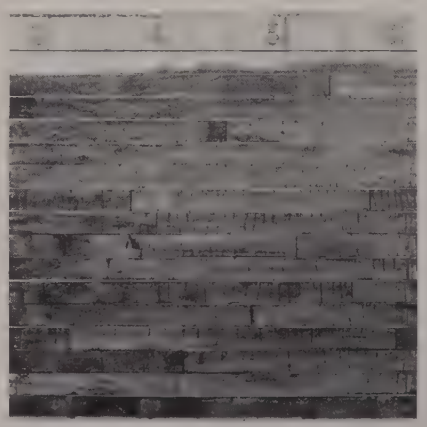
Similar experiments were conducted by applying fire to vertical panels, the ends of the wood and to individual pieces, with correspondingly good results from the processed specimens. As a result of these investigations, the Underwriters' Laboratories have been able to offer the conclusion that the material will not ignite readily, contribute fuel, nor add to the spread of the fire; and while it will char progressively when exposed to flame, it will cease to glow shortly after exposure.

Various extreme condition tests, some extending over a period of three and a half years, were conducted to determine the permanency of the fireproofing, taking into consideration the known properties of the chemicals and their reactions. The physical properties of the treated lumber were also investigated, and it was found that they were very little affected by the impregnation of the mineral salts. The workability was found to be equal in every way to that of the untreated lumber, the surface ability to take paint and varnish was unaltered, and the general appearance remained unchanged. The only perceptible difference was an increase in weight of about one-tenth over ordinary wood.

A full report of the tests performed, with their results may be obtained from the Underwriters' Laboratories report: "Fireproofed Red Oak and Maple Lumber for Flooring and Interior Trim."



Result of a fire spread test on maple, not treated, after fifteen minutes exposed to fire



Result of the same test on maple that had been treated, after twenty minutes exposure

W. Pope Barney, A. I. A., of Philadelphia, insists that after DOGS comes architecture

If Samuel Yellin has any real absorbing interest in anything other than metal working, it has to do with collecting examples of the craftsman's art in metal throughout the world

Leicester Bodine Holland, F. A. I. A., recipient of four degrees from the University of Pennsylvania (B.S., B.S. in Arch., M.A., and Ph.D.), professor of fine arts at his alma mater and chief of the division of fine arts in the Library of Congress, did yeoman service recently in blocking the proposed alterations to the east front of the Capitol

Edwin Hawley Hewitt, F. A. I. A., who has practised alone and with the late Edwin H. Brown in Minneapolis since 1904, has many interests outside of architecture—most of them civic. We do know that he is an authority on growing fine grapes, is interested in astronomy, fond of sketching, and here he is caught in evident enjoyment of his north country's winter woods

Sir Edwin Landseer Lutyens, whose work is as much admired and nearly as well known among American architects as it is in England and the British possessions beyond the seas

You know these men by reputation

CO-OPERATION I WANT

VARIOUS ARCHITECTS' POINTS OF VIEW WITH REGARD TO THE AID AND SALES ACTIVITIES OF THE MANUFACTURER

The co-operation I expect from the building material manufacturers is intelligent service. I cannot give time to a man who does not know his stuff but am always glad to see the one who does.

My experience has been that a product falls down completely without able and experienced representation.

Julius Gregory, A. I. A.,
New York City.

We don't want a lot of sales talk, as we try to look at a product fairly, and high-pressure salesmanship will not influence us.

We want information regarding the material, its character, use, and method of installation; laboratory reports and other reliable recommendations and experiences encountered; names of architects who have used the product, names of buildings or locations where it has been used and can be seen.

We want drawings to a fair scale, showing method of use or application.

We want real specification data —not the usually highly colored prints and pamphlets and verbose literature, which is sometimes handed out to a busy architect by some young man who has learned all he knows from a book or a few weeks of intensive study. Sometimes we refer to these chaps, jocosely, as "hander outers." Send men around who have had practical job and technical experience.

We want A. I. A. letter-size catalogs—not the small leaflets which become lost in the bottom of the filing cabinets, nor the large ones that fold up like a bed sheet.

Office of Dwight James Baum,
F. A. I. A.,
Riverdale-on-Hudson,
New York City.

1. What the average architect wants most, in the way of co-operation from manufacturers, is to be freed from the calls of wind-bag salesmen. The fellow who barges in, and without taking the trouble to ask if he may do so, helps himself to ten, fifteen or twenty minutes of an architect's time, and then leaves without so much as a "thank you," is bad enough. Worse still is the pest who calls periodically, leans across the gate, and says: "How do you do, Mr. So-and-so; *Jones' Cement*," and then looks at you with an idiotic grin. Remember, please, that the architect is a busy fellow, with a thousand distracting details on his hands, and that calls of this sort are nothing less than inroads on his time.

2. If a manufacturer has a new product, or an improved one that he wants to call to architects' attention, let him mail circulars or catalogs that tell the story as briefly as it can be told. Such matter is always looked over when time permits; if not, it is laid aside for a free moment. Personally, I much prefer this to the visits of high-pressure salesmen.

3. Manufacturers of standard products, who wish to keep their products before the profession, should be represented in "Sweet's Index." It is much easier to refer to "Sweet's," than to dig through a choked file of catalogs, many of which are obsolete.

4. When possible to do so, mail the architect a sample of your product. Most architects maintain sample files and are glad to add to them.

J. Frederick Kelly, A. I. A.,
of Kelly & Kelly,
New Haven, Conn.

The co-operation I would like to have from manufacturers can be divided into two different parts:

A. Information concerning the material.

B. Service in connection with same.

Information may again be divided into two parts:

(*a*) What the material may be expected to do and under what conditions it may be safely used.

(*b*) Complete data essential to the preparation of drawings and specifications for their uses.

Referring to *B* above, service which would be helpful, I frequently find that representatives of the manufacturers, whether agents or dealers, often know very little about the material they represent and, what is even worse, they attempt to cover up this ignorance with an assumption of vast knowledge of the subject. Responsible material should never be advocated for any uses or under any conditions which are not favorable toward giving satisfaction.

A very large percentage of the literature received by the architects from manufacturers is of practically no value to the architect as it amounts to selling propaganda. I think it would be well for every manufacturer to determine by consultation with architects the best form in which to present his literature for their consumption.

Franklin O. Adams, A. I. A.,
Tampa, Fla.

I need from a manufacturer:

1. A legible, letter-size, A. I. A. file-numbered catalog describing and giving sizes, etc., and free from sales appeals, for my files.

2. An agent I can call in to give me current prices and other information.

3. An organization that will make prompt and good shop drawings.

4. In some specialized trades, such as heating, competent engineering service which will make the manufacturer's guarantee worth its face-value.

5. From other material men, samples of such size and color as will adequately describe the materials.

6. I don't have much time for sales visits nor for looking at advertisements, therefore I want them brief.

Thomas Pym Cope, A. I. A.,
Philadelphia, Pa.

The days have passed in which the architect can assume that he is the sole creator of a building or that it is his personal, individual work. We recognize more and more, as we go on in the profession, that

it is simply co-operation of a large number of persons and individuals. The final outcome is perhaps to the credit of the architect, not, necessarily, to his genius as a designer, to his knowledge of construction, to his sense of planning, but to all the great forces which come together to make a building.

In the old days a building was a comparatively simple thing. It was only a matter of some walls, a certain amount of ornament, no mechanical equipment, and very little of the modern practice in regard to circulation, the movement of people, the movement of produce, and all the thousand and one things which come into one of our modern buildings.

But today a building is just as complicated a piece of mechanism as an automobile—more so in fact—and, like an automobile, it doesn't make a bit of difference how handsome the cushions and the upholstery may be or the inlay work on the interior of the car, or the tone and shape of the exterior of the car; if the old thing doesn't run. And a modern building must run.

We have to approach our problem from a practical point of view, of course, and we do need the manufacturers' support, their co-operation and instruction as to the use of materials that they are dealing in, so that we can fit our design and make use of those things which they have available.

Harvey Wiley Corbett, F. A. I. A.,
of Corbett, Harrison & MacMurray,
New York City.

That the manufacturer, on his part, realizes some of the needs set forth above, is shown by the excerpt from a letter to branch managers, salesmen and distributors:

The architect is a professional man just as is a doctor or a lawyer. Being in that classification, he does not relish high-pressure and "usual" selling methods. He does not want a salesman to come in and point out the things *wherein he may be wrong*, but rather he responds to the salesman who, without pretentions, places information in his hands or at his disposal that he can use.

C. L. Ellison,
Advertising Manager,
The Brunswick-Balke-Collender Co.
Chicago, Ill.

BIDDING PRACTICES

AND WHAT SHOULD BE THE FUNCTIONS OF THE VARIOUS PARTIES

In speaking before a Council meeting on the subject of Bidding Practices, William Stanley Parker, F. A. I. A., Chairman of the Joint Committee on Building Practices, suggested the following as a basis for action on the functions of the owner, architect, contractor, sub-contractor, material man, and labor.

The Owner should get what is called for and should pay a fair price for it, and estimates should be obtained in a manner that will permit him and his architect to know that the price is fair.

The Contractor should have general control of and responsibility for the execution of the entire work, and should be competent to assume such control and responsibility. He should submit a complete bid for the entire work under such conditions as will assure competition among sub-bidders on a one-price basis, including in this category all specially fabricated materials, whether installed by the producer or by others. He should select sub-contractors on the basis of competence as well as price, in the best interest of the owner, under procedure that will permit him so to act, and his own competence should in part be judged by the standing of the sub-contractors he recommends. He should be financially competent to carry through the work on his own

resources and to pay sub-contractors promptly in accordance with the terms of the contract. If the owner requires him to furnish surety it should be of such a nature as to protect the interests of sub-contractors who have lived up to the terms of their sub-contracts.

The Sub-Contractor should submit his proposal to the general contractors bidding on the work, under such conditions as will assure him that it cannot be misused to his disadvantage and that he cannot take advantage of a competitor by a revision of his proposal, all such sub-bids being on a one-price basis without opportunity for revision. He should secure his subordinate estimates for specially fabricated materials under similar conditions. He should be selected by the general contractor on the basis of competence as well as price, and the bidding procedure should be such as will make it practicable for his selection to be made on that basis. He should recognize fully his responsibility as a sub-contractor to the general contractor, so long as the general contractor recognizes and fulfills his own responsibilities as such.

The Material Producer should submit estimates to sub-contractors under conditions similar to those under which the sub-contractor submits his estimate to general contractors.

The Architect should request bids on a basis that will permit bidders and sub-bidders to estimate and to be selected as outlined above. He should not be held responsible for the uneconomic practices of contractors and sub-contractors unless he invites bids on a basis which invites such practices and makes them financially profitable, in which case he should at least be held as responsible as they; and since he, not they, can control the basis on which he invites bids, he may be held primarily responsible if he fails to adopt some procedure that the industry has tested in practical use and approved as conforming to the conditions outlined above.

He should have and should fairly exercise, in the interest of the owner, the power to approve the sub-contractors selected for those portions of the work believed by him to be of principal importance to its proper execution. In order wisely to exercise this power he should be fully informed of all sub-bids submitted from which the selection is made.

The Owner should permit the architect to obtain bids as outlined above and should not urge, induce, or force the architect to follow any procedure which the industry and the architect have decided is uneconomic and against the best interests of owners and the industry. He should employ an honorable and competent architect and should desire, in his own interest, the employment on the work of competent contractors at a fair price.

The PRODUCERS' COUNCIL

Producers' Council Clubs: Their Organization and Objectives

By John F. Gowen
Executive Secretary

THE Producers' Council was organized in 1921 as the producers' section of the Structural Service Committee of The American Institute of Architects. As the idea back of this movement grew, the desirability of sectional groups, which could work in co-operation with sectional groups of architects, became more and more apparent.

As a result there followed the establishment of Producers' Council Clubs in key cities throughout the United States. There are now twelve of these, located in Boston, New York, Philadelphia, Washington, D. C., Detroit, Cleveland, Cincinnati, Milwaukee, Chicago, St. Louis, San Francisco, and Los Angeles. These Clubs are organized under uniform regulations, and function under charters issued by the national body.

Their broad purpose is to promote locally the objectives of the national body and to co-operate with Chapters of The American Institute of Architects, architects, engineers, contractors, builders, the press, and the public, to further these objectives and every interest that tends toward the betterment of the building industry: to promote and encourage the adoption and use of new building material and equipment; and to work with state and municipal societies and other public and private agencies for the above purposes.

Membership is restricted to local representative of companies and associations which are members of The Producers' Council, Inc.

Because of their voluntary character they have many of the aspects of a social and civic club—an association of people for the furtherance of some common purpose. But they have not the broad opportunities of the purely social organization, for they have no facilities like a clubhouse, or common meeting place, their growth is restricted by rigid membership requirements, and their activities are limited by the fact that they can be carried on only at times suitable to the rather busy members.

Moreover, these Clubs are striving to make the intangible tangible—that is, to translate into terms of positive activity the broad and unbounded aims and ideals that brought the Council into existence. The very existence of a Council Club is predicated on the ideal of equal association of business friends and competitors for mutual benefit.

Club activities include periodic meetings, generally monthly, including joint meetings with architects, engineers, and other building interests, at which talks and discussions of informational or educational character are presented, dealing with the products and services of member companies, or with other matters and problems of joint interest. Other meetings promote better acquaintance and good fellowship. All tend to further the common interests of members and users of their products.

Among the important services that the Clubs render in their respective cities to the building group, including other branches than the local Institute Chapters, is the conducting of Informational Meetings (usually held in connection with a lunch or dinner), whereat Council members present programs featuring the latest information about their products and services. These programs are conducted by means of lectures, motion pictures, exhibits, etc., and bring to the locality up-to-date data on important developments in building products. Obviously, such gatherings provide an unusual opportunity for all the groups in the building industry, and particularly for the producers and specifiers of materials, to meet and become acquainted.

Statistics and other types of "end on end" information are always boring, but during 1934–1935 eight Council Clubs held 44 meetings, at which architects, engineers, and other non-member interests were included. The total attendance was approximately 6600.

The Producers' Council, Inc., strives earnestly to bring about better mutual understanding between various elements of the construction industry. The Council Club presents one of the surest ways of doing this, because it is a means of establishing contacts by special services rendered collectively. The Council Club member, the architect, the engineer, the distributor, the supply man, the contractor, the building owner, all have a common interest, and that common interest can be furthered in no better way than through the respect that comes from mutual understanding. The Council Club presents to the city in which it is established the machinery for establishing an *entente cordiale* between all the various groups that comprise this loose and disintegrated construction industry, in which we all labor and from which we all draw our livelihood.

ARCHITECTURE

REG. U. S. PAT. OFFICE

THE PROFESSIONAL JOURNAL

VOL. LXXIII No. 5 — MAY 1936

CONTENTS

Frontispiece: House of Thorsten Sigstedt, Bryn Athyn, Pa.
DOMINIQUE BERNINGER, ARCHITECT

Architectural Service in the Small-House Field — 259
Buffalo
Washington
New York

THIRTY-ONE SMALL HOUSES — 262

The Editor's Diary — 293

New Housebuilding Techniques: Modern Construction in Brick — 295
By Norman F. MacGregor, Jr.

Better Practice: Dumbwaiters and Incinerators — 297
By W. F. Bartels

Portfolio: Corner Windows — 301

Design in Materials

The Construction League of the United States — 317
By Richmond H. Shreve

The Producers' Council: Subjects to be Discussed in Convention — 319
By John F. Gowen

Builders of America — Elisha G. Otis — 320
By Benton B. Orwig

Paint: Its Modern Technology — 321
By C. Richard Forrester

Architects and Avocations — 324

When changing addresses, subscribers must give four weeks' advance notice and both their old and new addresses

ARCHITECTURE is published monthly, appearing on the 28th of the month preceding date of issue. Price mailed flat to members of the architectural and allied professions, to any address in the United States, $3 per year in advance; to all others, $6; add $1 for Canadian postage and $2 for foreign postage. Single copies, $.50. Advertising rates upon request. Entered as second-class matter, March 30, 1900, at the Post-Office at New York, N. Y., under the Act of March 2, 1879.

Copyright, 1936, by CHARLES SCRIBNER'S SONS. All rights reserved.

CHARLES SCRIBNER'S SONS, PUBLISHERS

CHARLES SCRIBNER, *President*

EDWARD T. S. LORD, WHITNEY DARROW, MAXWELL E. PERKINS, *Vice-Presidents*

GEORGE R. D. SCHIEFFELIN, *Treasurer* — JOHN HALL WHEELOCK, *Secretary*

NEW YORK: 597 FIFTH AVENUE AT 48TH STREET

[CHARLES SCRIBNER'S SONS, LTD., 23 BEDFORD SQUARE, LONDON, W. C. 1]

THE BUILDING TREND

By E. L. Gilbert

MARCH construction figures indicate a continuance of the steady improvement in New Residential building, a reasonable gain in Commercial and Industrial activity compared with last year, and a spurt in Other Work. Total building construction for the entire United States revealed a betterment by more than 31 per cent above March, 1935, and higher by 13 per cent than last month's total volume. With building material prices holding their own without either great advances or declines, plus the undoubted optimism expressed by building-field professionals, there seems to be plenty of reason to look forward to a well-sustained and active building year in 1936, with substantial gains yet to be recorded during the late spring and early summer months.

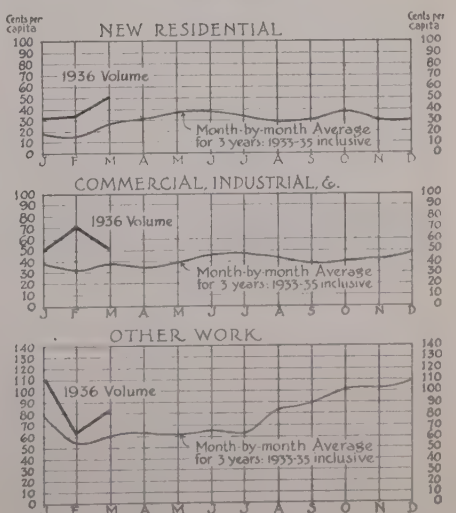
MONTH OF MARCH
(DOLLARS PER CAPITA, ENTIRE U. S.)

CLASSIFICATION	1934	1935	1936
New Residential . .	$.26	$.35	$.51
Commercial, Industrial, etc.	.52	.40	.52
Other Work	.64	.67	.84
Totals . . .	$1.42	$1.42	$1.87

Building Material Prices, U. S. Dept. of Labor, end of March* . .	86.2	85.0	85.1

* Index numbers based on: 1926 = 100.

THE YEAR



House of Thorsten Sigstedt, Bryn Athyn, Pa.
Dominique Berninger, architect. (*See also page 262*)

RCHITECTURE
OLUME LXXIII NUMBER 5
MAY, 1936

Architectural Service in the Small-House Field

TO one whose eye is lifted above and beyond an individual practice, scanning the signs of the times, an architectural movement of unquestioned power and significance seems imminent. It has to do with neither modernism nor traditionalism; it is unhampered by considerations of style; it impinges only slightly on the field of æsthetics. The movement approaches—not in the trappings of the zealot in artistic creation, en route to a pageant, but rather in the working clothes of a master builder who has a practical but immensely important task to perform.

The movement, if such it turns out to be, is a rapidly expanding effort to help some hundred millions of Americans to build themselves decent homes. It seeks to dip beneath the creation of cathedrals, the building of monuments to the patrons of art, the glorification of industry, reaching into that vast ocean of human needs for a real job—the genesis of all structure, the modest home of the average citizen.

If the man who, in a given society, has been selected, trained and set apart to serve it as building technician—if this man deliberately turns away from what should be his most important responsibility, he fails—utterly—and society must replace him with one who is able and willing to serve it.

It would seem that society has been more than patient with the architect, treating him as it would a child suspected—perhaps without justification—of being gifted beyond his fellows. Society has favored its precocious child, has excused his practical shortcomings, his occasional haughty petulance over the common duties and responsibilities of life. It seems unlikely, however, that society, the great mother, will continue indefinitely to pamper a child that, having the ability to carry his share of the common burden, persistently refuses to shoulder it.

Perhaps an inkling of this homely fact is beginning to percolate into the collective mind of the architectural profession. There are signs that the architect is awakening to the realization that he had better put on some working clothes and lend a hand with the chores.

Buffalo

AS the present movement to establish an adequate architectural service in the small-house field goes down into history, those who come after us will soon be debating as to who started it all. There may be another claimant for that honor, but it seems likely that the Buffalo Small House Bureau, formed under the sponsorship of the Buffalo Chapter, A. I. A., was the first one to get into action. The movement in Buffalo started about a year and a half ago with a Housing Show. The fifteen or twenty members who formed the Bureau took advantage of that opportunity to establish a knowledge of this new relationship in architectural practice by having one of its members available at all times in the show to answer the questions of visitors.

The movement in Buffalo has had the co-operation of the Real Estate Board, and was instituted with the intention of enlisting the support of local loaning institutions. The details of this latter co-operation have still to be developed.

An office has been established in the Architects and Builders Exhibit—a permanent exhibition of building materials—and in charge of this office is a manager and a stenographer. Any one interested in building a small house may see in this office the designs of various types made by the members of the group. A small printed circular is available for any one who calls, explaining the nature and full details of the service offered. There are at present three or four inquiries each day, and, as in the case of most of the other groups, there seems to be a period of incubation of indefinite length. Occasionally an inquiring prospect returns in a week, sometimes not for a year. Up to the present writing seven commissions have been undertaken.

As to some of the details of procedure, the group furnishes the services of one of its members at the stated lump-sum fee only if there are no changes to be made in the drawings. Any changes, however minor, are paid for at the rate of $2.50 per hour drafting time. The group furnishes four sets of blue prints and specifications, and takes bids from three or four contractors selected by the designing architect. There is no approved list of contractors privileged to bid; each architect uses his own discretion in the selection of those permitted to bid. The limited architectural service includes three preliminary office visits or conferences between the client and the designing architect. Additional visits, when requested by the client, are charged at $5 each. Six stated inspections of the house form a part of the service.

As to payment, the fees vary from $100 for a house costing under $4000 to $150 for the maximum limit of $7500. The client pays 10 per cent of the fee upon the selection of a plan; 50 per cent more upon the taking of the bids, and the balance as the work progresses.

For each commission accepted, the architect pays into the Bureau treasury the sum of $10. It was expected that the money so received would maintain the headquarters—not at the outset, but when the plan is fully in operation.

JAMES WILLIAM KIDENEY

Washington, D. C.

A NUMBER of Washington's younger architects, forced by circumstance to realize that the small-house field must constitute the major source of work for some time to come, and aware that only a very small portion of that work has ever come the way of the architect, decided to offer a modified form of architectural service and thus broaden their field of potential clients.

The recent endorsement of the group service plan for small-house work by the Board of Directors of the American Institute of Architects prompted the formation of an organization along the lines of those already approved and in operation.

It was apparent from the first that the success of the venture would depend upon the solution of the following problems: Financing the organization which was felt necessary to the proper execution of the plan; developing a dignified and ethical method of acquainting the public with the service offered; and, finding the most direct source of contact with persons who might be seriously thinking of building.

It was while these problems were being considered that the group was tendered an offer of assistance from the Federal Home Loan Bank System in the development of the plan.

In spite of considerable skepticism on the part of the group as to the wisdom of operating in any manner other than as an independent entity, the offer was accepted and, with the approval of the Washington, D. C., Chapter, A. I. A., a plan was formulated which, for the first time, brought together the three major factors in residential work: the architect, the builder, and the lending institution.

The result of this collaboration was the immediate solution of all the real problems mentioned above. The need for extensive capital and staff was eliminated by the use of the lending institution as the central headquarters and display room. The matter of proper advertising was likewise disposed of by the revision and broadening of that institution's regular advertising program—and the problem of direct contact with prospective home builders was solved in a most excellent manner due to the fact that the display was bound to be constantly before the eyes of depositors, the genuine source of prospective clients.

It would perhaps be best to follow an imaginary client through the whole procedure of the service.

Mr. Doe, interested in building a house which would cost not more than $7500, finds an advertisement in his daily paper which states that the Perpetual Building Association of Washington is offering a new architectural advisory and supervisory service which will make the building of his home an easy and pleasant undertaking and, at the same time, will relieve him of worry and concern about the proper construction of the house.

Parenthetically, the price limit for houses in this service plan has been set at $7500 (as is the case with most of the groups in other cities) as representing the cost above which group service at a modified fee would encroach upon the field of practice of individual architects.

The prospect's interest aroused, he visits the Association named and finds an extensive display of varied small-house designs prepared by the Washington Architects Small Home Service group, all of whom are registered and recognized architects experienced in small-house work. An attendant, conversant with all details of the service, explains the plans and points out the complete description of materials, equipment and finish, as well as the carefully prepared estimate of cost of each design.

Mr. Doe is asked to fill out a prepared form which will set forth his requirements for a house, his occupation, location of lot, a brief financial statement and other pertinent data.

He learns that, having a lot free and clear, he may borrow as much as 75 per cent of the appraised value of lot and the house he proposes to build.

Suppose then that Mr. Doe selects a design from those displayed. He finds that the architect's fee (amounting to slightly more than 2½ per cent of house cost) is included in the estimate of cost and will be considered in the appraisal of house value. He finds, too, that he may, if he wishes, deposit with the lending institution the cash which represents the difference between the amount of loan and the combined house cost and architect's fee and that all disbursements will be made to both architect and builder by that association.

Having selected a design, Mr. Doe is directed to the architect by whom it was prepared, and both visit the site selected to determine the suitability of design to lot and neighborhood. Should the site be found favorable, Mr. Doe and his architect will proceed with the next step. Should the architect decide that the design selected is not suited, he will make recommendations for adjustment of plan to site, or in extreme cases, refuse to permit the use of the design on the site. In the latter case it will then be necessary to select another design which may be better suited to neighborhood and site conditions.

Assuming that the site, etc., has been approved, a contract is then entered into by Mr. Doe and the architect. At this time the architect receives one-fifth of his fee.

The architect, having the working drawings for the design selected already prepared, need only make one more drawing peculiar to the requirements of this project, namely, the plot plan. This plot plan shows the adjustment of the plan to grade conditions of Mr. Doe's lot.

This plot plan, constituting a special service for each client, must be paid for independently of the flat fee already included in the estimate of cost. The charge for this plan is based on actual cost of drafting and, as two or three hours will suffice for its preparation, the charge will be nominal.

Granted that all necessary information has been assembled which will affect the project, the specifications (which, like the drawings, are already prepared) are modified in minor details as to finish or equipment and the job is put out to bids to not less than four builders who have been selected from an approved list.

The bids in, and the builder selected, the architect furnishes the builder with six sets of blue prints and the work is begun.

The supervisory service furnished by the architect will be as follows:

1. Inspection of the excavation and soil before footings are placed.
2. Inspection of all walls below first-floor joists.
3. Inspection of all work before second-floor joists are placed.
4. Inspection of all work up to, and including, roof framing.

5. Inspection of roughed-in plumbing and electrical work.
6. Inspection of plastering before trimming out.
7. Inspection of all trim and finish woodwork and equipment installation.
8. Inspection of paint and other finish.
9. Final inspection of completed work.

Upon awarding of the contract the architect receives another two-fifths of his fee.

Payments to the contractor are made at stated intervals according to regular practice, during execution of the work, and only upon certification by the architect that the work has been satisfactorily carried to the stage required for payment.

The balance of the architect's fee is paid in three equal instalments. The advantages of this system for architectural services on small homes are obvious.

The very fact that the lending institution, the architect and the builder are in accord and co-operating to make the service available and workable through an established and reliable source, that is, the Building Association, is evidence of prequalification of those concerned in the project.

E. P. Schreier, A. I. A.

New York

NEW YORK caught the germ at a comparatively late date in the recent epidemic, but surely has not lacked in the depth and speed of the inoculation. There are between fifteen and twenty individuals and firms in the group, and for a limited time—until some things are learned about procedure and needs, the group is temporarily closed. It is by no means, however, to remain a closed shop. A committee on members will have the duty of passing on the qualifications of architects who would join Small House Associates after the preliminary test period. There is only one thing that would keep one out, and that is lack of ability in the small-house field.

During the first month or two of its existence, one of the members loaned a room in his offices in which designs made by the various members were on view in a fairly uniform method of presentation. Incidentally, these original mounts, bearing a pencil perspective and poché plans, were soon found to be suffering badly from handling. Several sets of photostatic copies were made, about 8½ by 11 inches in size, and bound in loose-leaf flexible binders, which facilitated the inspection of the designs when there was more than one visitor. Members of the group took charge of the room on a schedule, each serving about a half day in each two or three weeks. This practice soon became burdensome, and a part-time manager was employed. At the present writing the installation of a full-time manager is being considered, together with the group's own office space.

From the very first, it was considered an essential to the success of the movement that the co-operation of the lending institutions should be enlisted. Progress in this effort is being made rapidly, largely through the aid of those in the Home Owners Loan Corporation and FHA who had been working toward an improvement in small-house practice.

In the brief experience of the New York group, few, if any, of the designs available have been selected as the basis for a commission. Prospective clients, however, have, in a number of cases, informed the office of their intention to build somewhat larger houses than those represented, and each has been put in touch with the architect whose work he most admired, to sign eventually a contract for the regular architectural service at the regular fee.

A booklet is available in the offices, explaining very briefly the limited service offered and its cost. Here the fee varies from $150 for a house costing $3500 to $4000, up to $260 for a house costing $7500 to $8000. The work of Small House Associates, it is believed, differs from other groups in that it is expected that minor changes will be required, and drawings in accordance with these are included in the stated fee. These changes, however, have to be based upon two conferences and a signed questionnaire, and the drawings and specifications are not subject to further changes without additional charges, on the basis of drafting time required.

At the first conference between client and the architect who has been selected upon the basis of a choice from the standard designs, the client signs a contract for architectural services, and pays 10 per cent of the fee. A second conference is arranged when the working drawings are in their preliminary stage, to check these and the applicable portions of the specifications. At this conference, an additional 10 per cent of the fee becomes due. When the working drawings and specifications are completed, a third conference is held, at which the drawings, details, lists, and specifications are signed, and thereafter sent out for bids. At this time an additional 40 per cent of the fee is due. It is planned, but not fully determined as yet, to accept no more than four bids from an approved list of contractors.

Six visits of inspection are made either by the designing architect or by a qualified superintendent employed by the group.

Here is another notable departure from the established procedure of architects in general, and of the small-house groups as well. The careful cost estimates procured in advance by the Small House Associates make it possible to foretell within reasonably close limits the cost of any house the client selects. The Small House Associates, of course, do not guarantee the cost of any house, but if the low bid of a contractor acceptable to the Small House Associates is more than 10 per cent above the preliminary estimate, taking into account any changes made in the drawings and approved by the client, all payments made on account of the fee will be refunded if he decides to drop the project. In other words, the New York group feels that if it fails, through its own lack of knowledge and professional skill, to do for a client what it says it can do, then the group's own cost in the proceedings should surely be its own loss, not the client's.

Small House Associates has been, and still is, supported at the expense of its members. Just how long this burden will continue is a matter for conjecture, but the group members are reconciled to the possibility of six months' operation before it becomes self-supporting.

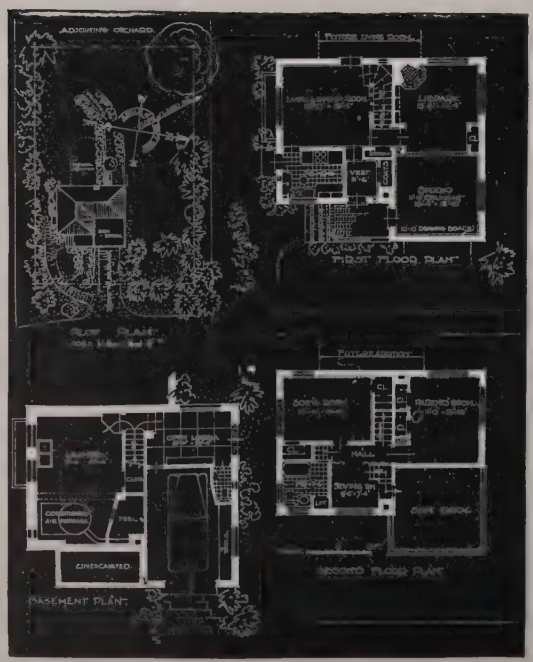
Henry H. Saylor

House of Thorsten Sigstedt, Bryn Athyn, Pa.

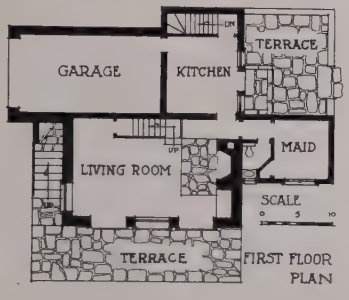
DOMINIQUE BERNINGER, ARCHITECT

A primary requirement was a studio, 11′ high, accessible without passing through the residential portion of the house, yet available for social use in conjunction with the library. A large living-room, as indicated on the plot plan, is contemplated

Main entrance doors to house (left) and to studio. The house has a cubage of 21,500 ft., and cost $5830, exclusive of screens, refrigerator, finished grading and planting



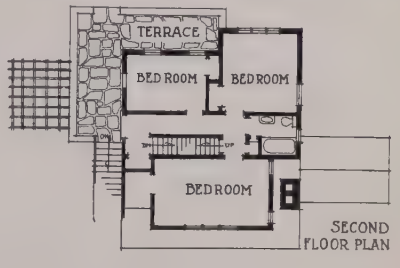
Joists with solid bridging show over library and combined living-room and dining-room. Horizontal knotty pine sheathing is used here, sand-finish plaster elsewhere. The house is thoroughly insulated



A cottage planned for week-end and occasional use, located on the towpath between canal and river, with advantage taken of both views, sun and prevailing breezes. The ground-floor bedroom can be used either as maid's room or a guest room.

Stonework of walls and flagstones of paving, in soft reds, grays and blues; woodwork inside and out, a cream white; shutters and doors, blue green; roof shingles of three sizes, laid with varying weatherage.

Cost, approximately $7500, without land, well, pump or sewage disposal plant. Cubage, 22,400



House of Miss Christine Ross, New Hope, Pa.

MARGARET F. SPENCER, ARCHITECT

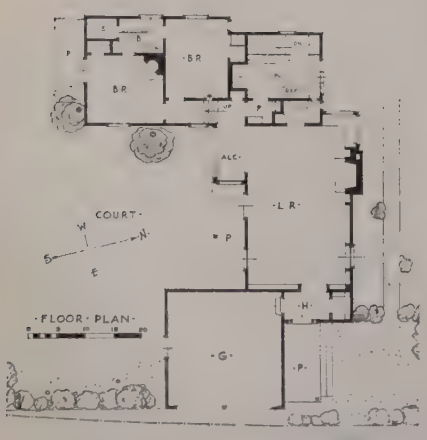
House of W. H. Durham, Berkeley, Calif.

ROLAND IRVING STRINGHAM, ARCHITECT

On a foundation of reinforced concrete, the superstructure is of frame covered outside with redwood boards molded on the edges and painted white. Roof is of untreated cedar shingles. Shutters are of white pine, painted green. Heating is by gas-fired warm-air furnace, and there is no insulation beyond the usual building paper.

In the living-room the walls are of white pine, glazed with white lead, and the trussed ceiling is in evidence. A corner window by the fireplace looks over San Francisco Bay and Mt. Tamalpais, while the window in the alcove opposite gives a view over Wildcat Canyon and admits morning sun to the breakfast table.

Cubage, 17,075; total cost, $6800, or 40 cents per cu. ft.



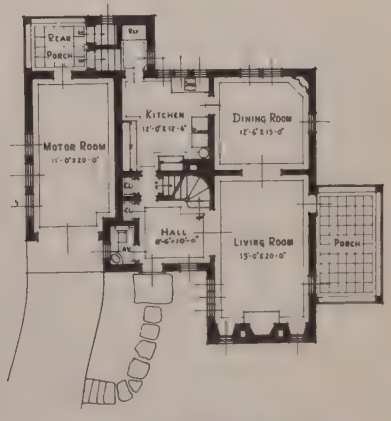
Exterior walls are of frame construction covered with 24-inch shingles painted, and brick veneer across the chimney end. Cubage, 28,000 feet; cost, including architect's fee, $7400

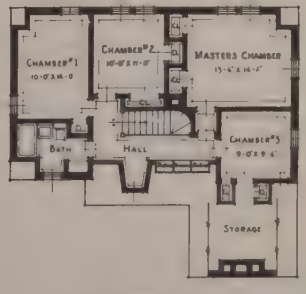
Photograph by George H. Davis Studio

House of Edgar F. Bickford, West Medford, Mass.

SAMUEL GLASER, ARCHITECT

Entrance steps and porch are paved with flagstone; windows are both wood double-hung, and leaded-glass casements; oak floors throughout, with the exception of kitchen and bathroom, which have linoleum. The roof shingles are of the asphalt type. Vapor heating is installed, with an oil burner. The bathroom is tiled around the tub. Walls are, for the most part, papered, with pine sheathing on the fireplace end of the living-room. There is an incinerator and a clothes chute



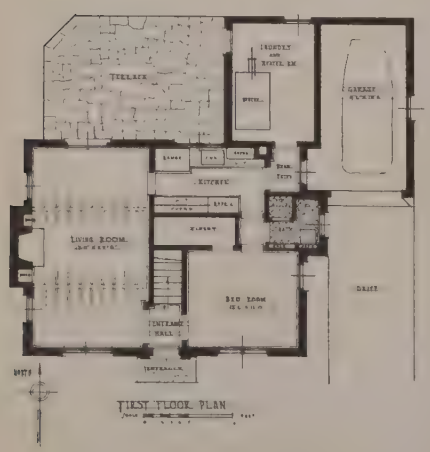


House of Paul W. Miles, Des Moines, Iowa

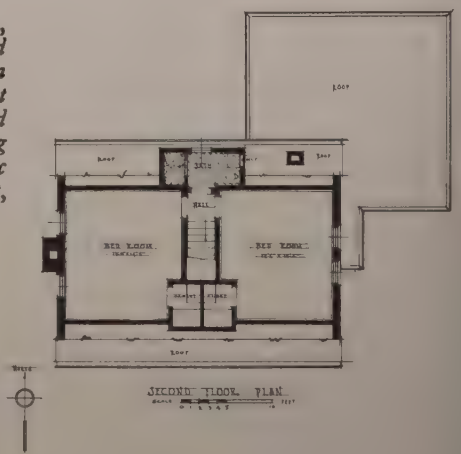
WETHERELL & HARRISON, ARCHITECTS

The house is built of cinder blocks, the exterior of which are painted with cement paint. There is no basement, the first floor being placed upon a layer of sand and building tile to provide drainage and air space under the cement floor. The entire first floor has linoleum covering the cement.

All walls, excepting in the bathroom, are sheathed with knotty pine. Joists for the second floor are adzed beams, which show on the living-room ceiling. A rigid insulation board was used over these beams under the second-floor boards, serving both for sound deadening and as finish ceiling



Roofing is of black asphalt shingles, excepting the roof over garage and laundry room, which is flat and is a built-up composition roof. Heat supplied by a warm-air furnace and an oil burner, the furnace being equipped with filters and automatic humidifier. Cubage, 17,800 feet, costing $.278 per cubic foot



An unusual scheme was carried out in the living-room, where the walls are sheathed with pine stained rather dark, and a simple cornice, chair-rail and doors are painted ivory

There is no cellar under the house, the air-conditioning system being located just back of the one chimney

House of L. P. Simpson, Old Greenwich, Conn.

HARRISON GILL, ARCHITECT

Photographs by George H. VanAnda

Second-hand brick were used for the walls, painted with an oil paint. Roof is of red cedar shingles. Outside trim is painted a cream color

Steel casement windows are used throughout, and the concrete tile has been given a coat of cement paint

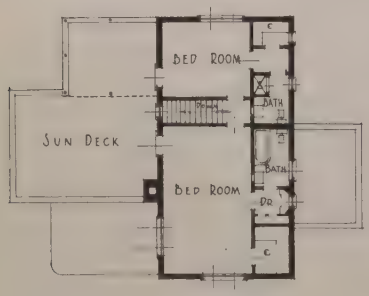
Photographs by Farley Studio

House of William Lipscomb, Dallas, Texas

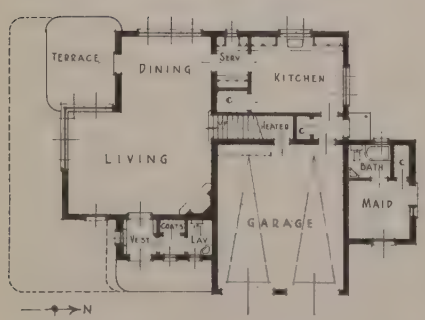
THOMPSON & PERRY, ARCHITECTS

In the rather hot Southwest, the prevailing breeze is always from the south. It is absolutely necessary in a well-planned residence for bedrooms and other living quarters to have this south exposure.

Exterior walls are of concrete tile, the inside plaster being applied on furring strips. Throughout the first story, the flooring is terrazzo on a concrete slab; on the second floor, hard wood. Quarry tile floors the sun deck, and the bathrooms have tile floors and wainscot. The roof is of a built-up membrane type, under which there is insulation consisting of four inches of rock wool. Total cubage, 22,436 feet. Erected in 1935 at a cost of $.333 per cubic foot



SECOND FLOOR PLAN



FIRST FLOOR PLAN

Outside walls are of 24" shingles and brick veneer, the chimney of brick. Asphalt shingles are used on the roof

House of Philip Marson, Brookline, Mass.

SAMUEL GLASER, ARCHITECT

Photographs by George H. Davis Studio

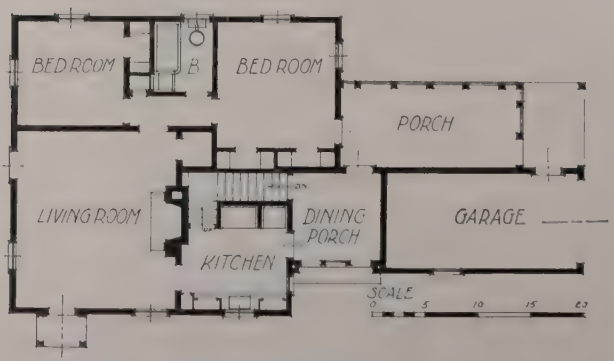
The house contains 29,000 cu. ft., and was built at a cost of $7500, including architect's fee, or 25.5 cents per cu. ft. White pine was used for trim and for special details in living-room and elsewhere. Floors are of oak, except kitchen and bath, which are covered with linoleum. The house has interlocking weatherstripping, insulation in walls and attic floor, a basement-fed incinerator, and is heated by a vapor system with oil burner

A House at Harbor Green, Long Island

RANDOLPH EVANS, ARCHITECT

Photographs by Gustav Anderson

The house contains 15,000 cu. ft., and was built at a cost of $7050, including lot, planting, oil burner, washing-machine, gas range and electric refrigerator. The house is planned with the idea of adding a porch on the living-room end, 9′ x 14′, centering on the door and extending only to the near edge of the flanking windows, so as not to cut off too much light from bedroom and living-room



House of Miss Mary Burnham, Yorktown Heights, N. Y.

ELISABETH COIT, ARCHITECT

The owner is a serious and prolific amateur gardener who desired a shelter planned to require a minimum of housekeeping—and a maximum of view toward the Westchester Buttermilk range. Flanking the garden entrance are closets for tools and clothes. On either side of the deeply recessed south doors and windows of living-room are niches for books and for flower display.

The exterior is of light gray shingles, with dull red shutters, and dark gray shingle roof. The cost, $3000

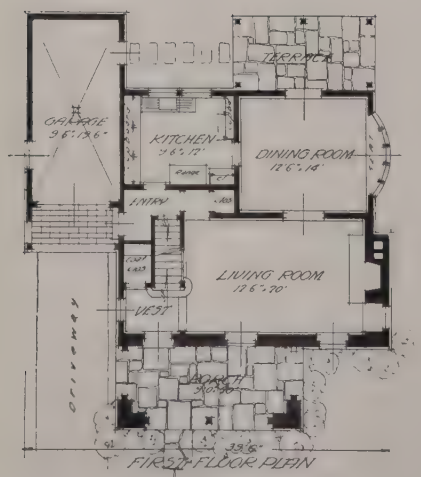
PLAN

SCALE 0 5 10 FT

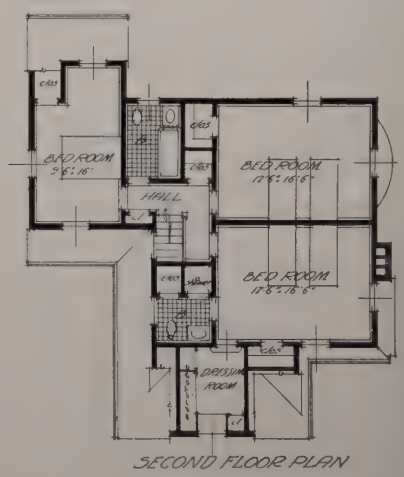
A House at Hackensack, N. J.

R. C. HUNTER, ARCHITECT

Photograph by Adolph Studly, Jr.



The house contains 27,900 cu ft., and cost $8900, or about 32 cents per cu. ft. There is a full cellar under it. Front wall and porch are of Pennsylvania ledge stone, the other walls of frame construction covered by stucco and shingles. The roof is of slate, and is insulated. Inside, the baths are tiled, other floors oak, with the exception of linoleum in the kitchen

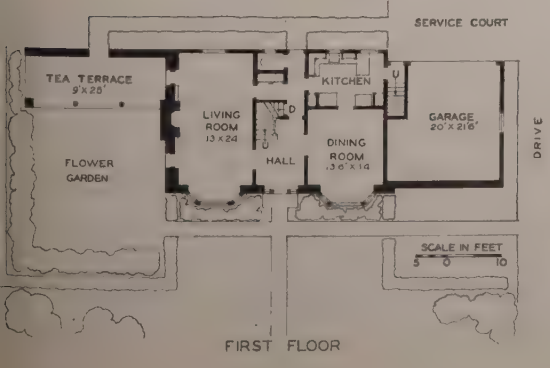


House of Dr. Stephen B. Sweeney, Lansdowne, Pa.

W. POPE BARNEY, ARCHITECT; ROY W. BANWELL, ASSOCIATE

Photographs by Dana A. Barnes

Instead of the usual open terrace or covered porch leading from the living-room, the plan shows a stone wall continuing out from the house with a tea terrace sheltered by an open roof of unfinished cedar poles—this terrace forming a secluded site for a flower garden that is in effect an additional outdoor room. As the plan indicates, there is provision here for a maid's room and bath to be finished sometime in the future over the garage

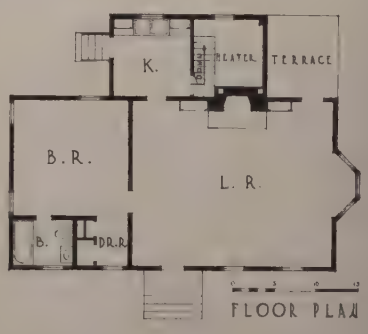


House of R. C. Beatty, Tuscaloosa, Ala.

MILLER, MARTIN & LEWIS, ARCHITECTS AND ENGINEERS

Photographs by O. V. Hunt

Here is a one-story house of minimum accommodations, but planned with a definite provision for adding a second bedroom and closets. The roof is of asphalt shingles; the exterior walls of weatherboard over wood sheathing. Inside, the living-room is sheathed in wood, the walls elsewhere plastered. Floors are of oak, fireplace of native stone. The house was built at a cost per cubic foot of $.16



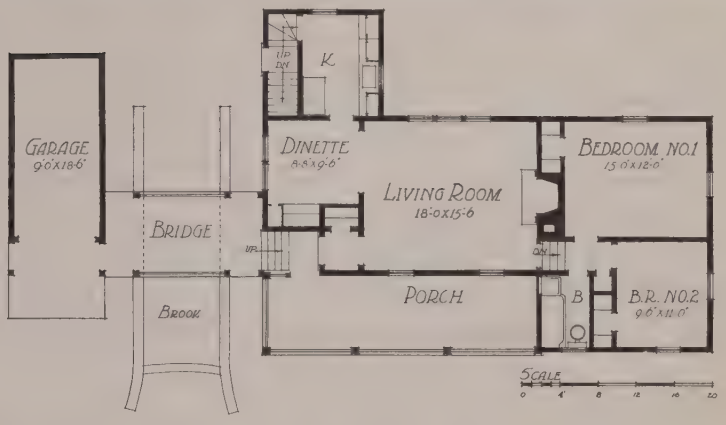
FLOOR PLAN

A House at Chatham, N. J.

RANDOLPH EVANS, ARCHITECT

Photographs by Gustav Anderson

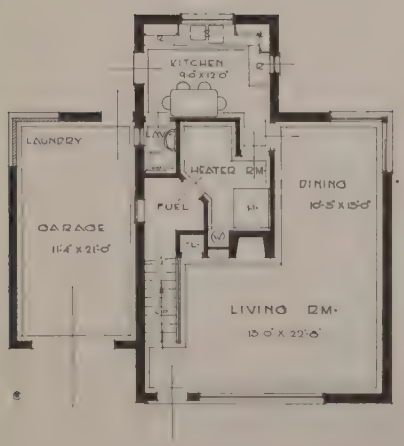
The architect has seized upon the small brook as a feature of both plan and landscape, giving the house an individuality that might not otherwise have been achieved. The house totals 18,700 cubic feet, and was built at a total cost of $9300, including the land, the landscaping, oil burner, washing-machine, gas range, and electric refrigerator

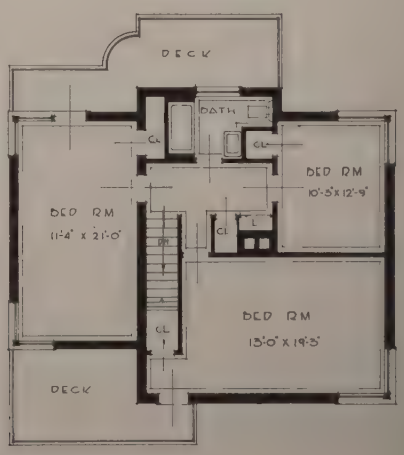


House of L. C. Crandall, Toledo, O.

BRITSCH & MUNGER, ARCHITECTS

The house is built of cinder concrete block, with concrete joists and floor slabs. The concrete joists are exposed and painted. The house contains approximately 20,000 cubic feet, and the cost was $.30 per cubic foot



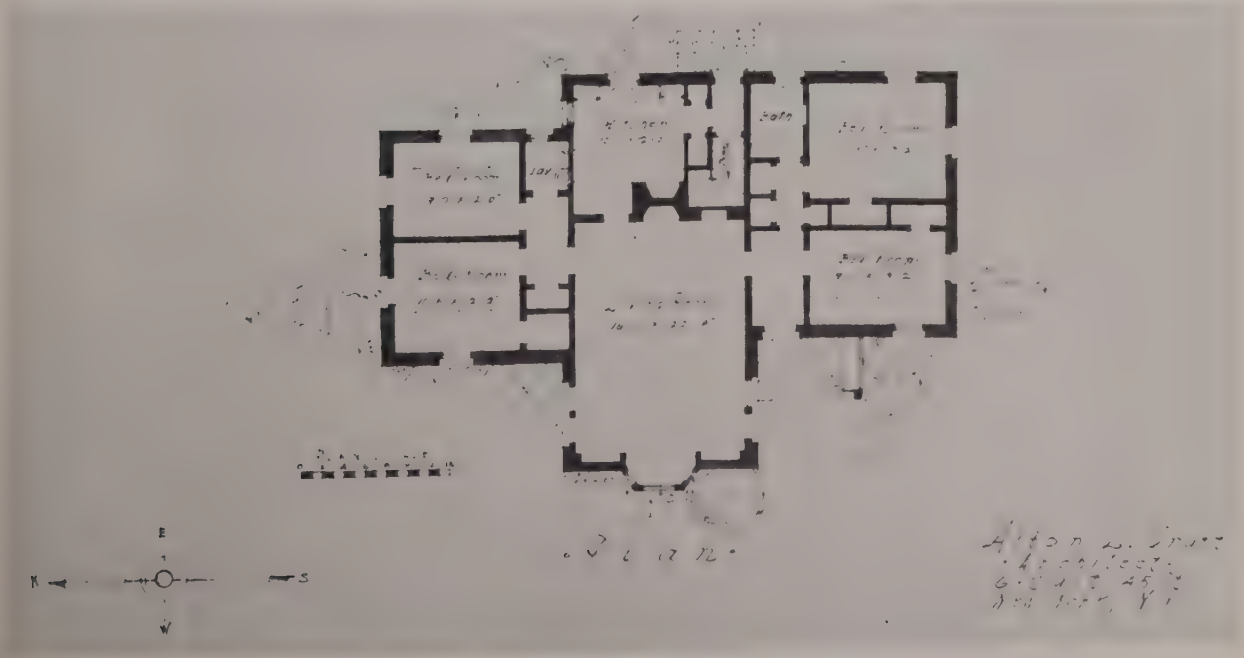


There is no cellar under the house, a heater room being provided behind the one chimney, as indicated

House of Eugene Egan, Walden, N. Y.

ALTON L. CRAFT, ARCHITECT

The house contains 25,800 cu. ft., and cost 30 cents per cu. ft. Exterior is finished with 8 in. of stone veneer against a wood frame, with asphalt shingle roof. Recirculated, humidified air is used in a system combining furnace and gravity-feed oil burner. No insulation or weatherstripping. Living-room has knotty pine sheathing and sand-finish plaster ceiling. Elsewhere inside, the walls are of three-coat plaster on gypsum lath



House of James Larkin, Birmingham, Ala.

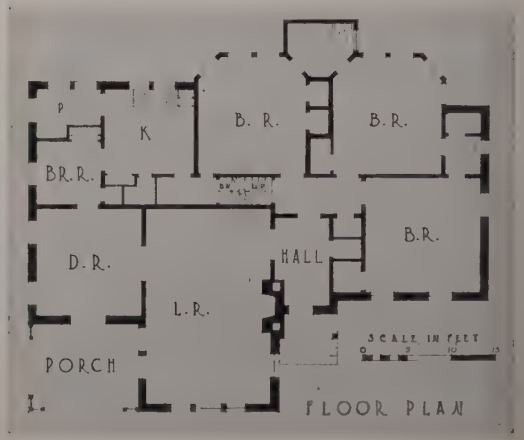
Photographs by A. C. Veily

MILLER, MARTIN & LEWIS, ARCHITECTS

A house built for sale, with the object of providing arrangements and equipment to meet average requirements in a minimum area.

Walls are brick-veneered, whitewashed; roof, asphalt shingles; porch floor, brick-paved; heating by steam; bathrooms tiled on floor and wall; oak floors; interior walls plastered and papered; windows double-hung; garage and servants' quarters detached.

Cost per cubic foot, 27 cents. Financing through FHA-insured mortgage loan. Sale made before completion of house



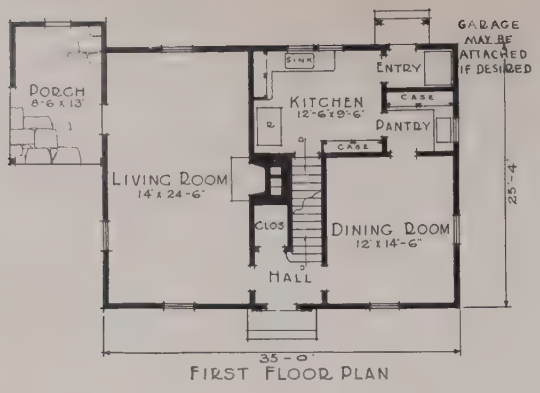
Photographs by Samuel H. Gottscho

There are approximately 33,000 cu. ft. in the house, and at 32 cents per cu. ft.—a fair estimate under present conditions—would cost about $10,560. The plan is such that it can be built on a comparatively narrow plot and still not appear crowded. There is a two-car garage in the basement.

This house won the Bronze Medal of "Better Homes in America" in 1932

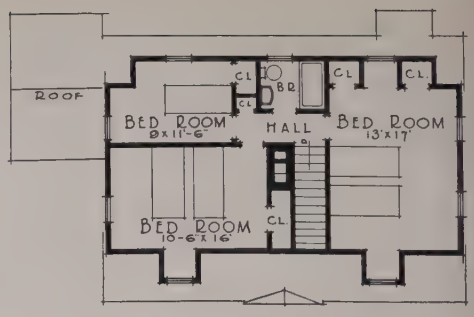
House of Thomas McCall, Riverdale-on-Hudson

DWIGHT JAMES BAUM, ARCHITECT



FIRST FLOOR PLAN

The porch at left was reversed, and the garage built at the right rear corner, as indicated in the photograph



SECOND FLOOR PLAN

A House at Wellesley, Mass.

THE ARCHITECTS' SMALL HOUSE SERVICE BUREAU, NEW ENGLAND DIVISION
BENJAMIN PROCTER, SUPERVISING ARCHITECT

The house was built from a standard plan of the Bureau, with minor revisions made to fit the owner's needs and desires by the architect who supervised the construction.

Thoroughly insulated with rock wool and efficiently weather-stripped, the house has a simple type of air conditioning. An unusual circumstance facilitated summer cooling: in excavating, two springs were found and these were enclosed with tile and piped to a nearby brook. In the summer months an automatic fan draws air from the outlet at the brook, passing it over the cold water, and circulating it through the house.

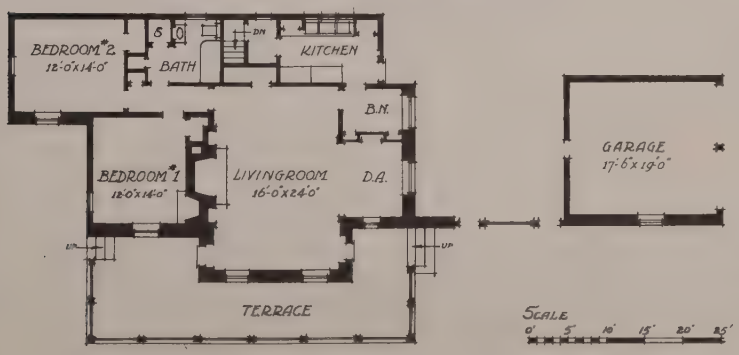
Cubage, approximately 24,600 cu. ft.; cost, $6000.

Photographs by Phil B. Wallace

House of William Elliott, Gulph Mills, Pa.

J. LINERD CONARROE, ARCHITECT

In spite of the fact that the sloping side called for a rather extensive stone wall to support the front terrace, the cost per cubic foot was in the neighborhood of $.32



The walls of the living-room show the timber construction, with a textured plaster between. Some old beams from a barn were used to support the second floor

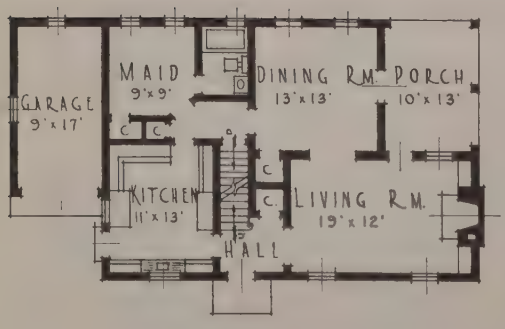
Pine sheathing with a molded joint is used in the dining alcove off the living-room. The old beams were cleaned with acid and scraped

House of E. Kettner Gadebusch, Summit, N. J.

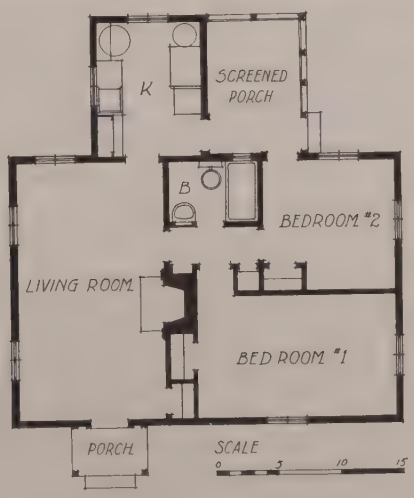
DAVID LUDLOW, ARCHITECT

Photograph by Gustav Anderson

The house stands upon a 75-foot lot facing due north. The siding is a cream color; shutters, green; shingle roof, a tobacco brown. The house is heated with a one-pipe steam system fired by an oil burner. All radiation is concealed. Second-floor ceiling and walls have been insulated with glass wool. The house contains 24,500 cubic feet



The plan is interesting in that both second-floor bedrooms have cross ventilation and three windows, each, in spite of the one-story Cape Cod effect on the front



Wood frame on brick foundation. Interiors, plaster on metal lath. Exterior walls and exposed ceilings are insulated with glass wool. The house is fully electrified, including the heating. Cost, not including overhead, $4359

ARCHITECTURAL SECTION, TVA, DIVISION OF LAND PLANNING AND HOUSING

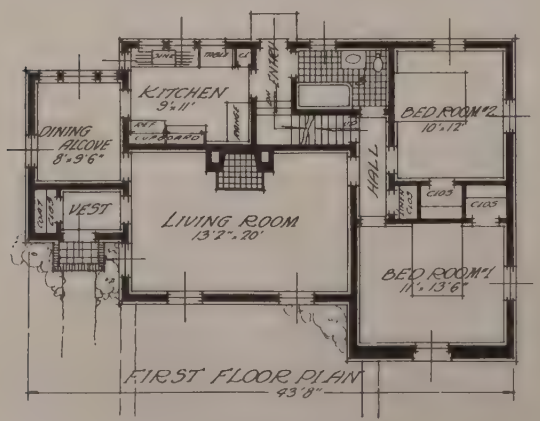
TVA House at Pickwick Landing Dam, Tenn.

House in Great Neck, N. Y.

R. C. HUNTER, ARCHITECT

Photograph by Adolph Studley, Jr.

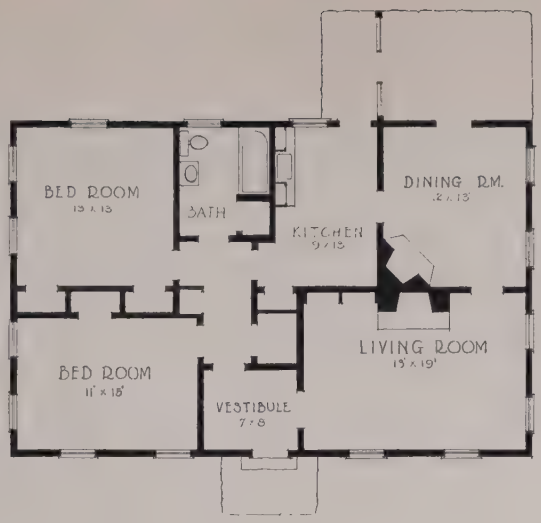
The house is of frame construction on a stone foundation, with wood shingle roof, insulated. It contains 23,500 cubic feet, including a full cellar and finished second story, and cost $7700, or $.32 per cubic foot



Linoleum is used for the kitchen floor, tile for the baths

The sloping site made it possible to put the garage in the cellar and make a feature of its entrance

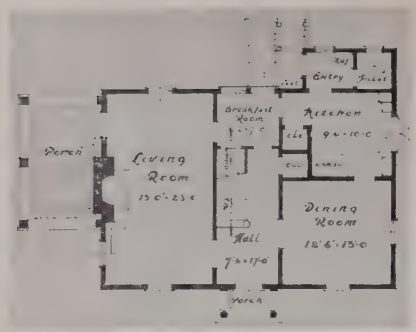
On a concrete foundation, the house has a wood frame covered with bevelled siding; roof is of hand-split cypress shingles. Inside, the walls are plastered and papered; wide



pine boards are used for flooring, treated with a dark stain filler and covered with dull-surface varnish. As to size, the house contains 17,835 cu. ft., and the cost was $4000

House of Mrs. W. O. White, Camden, Ark.

BRUEGGEMAN & SWAIM, ARCHITECTS



A house which was awarded the Gold Medal of "Better Homes in America" for its simplicity and charm. The architect has evidently endeavored to translate, in the simple mass and restrained detail, something of the character of our own Greek Revival. With the exception of the front, which

is faced with shiplap, the house is shingled and painted white, with dark green shutters and roof. Cubage, approximately 30,000 cu. ft.; cost, about 34 cents per cu. ft. Away from the New York area the architect has built similar work for 32 cents per cu. ft.

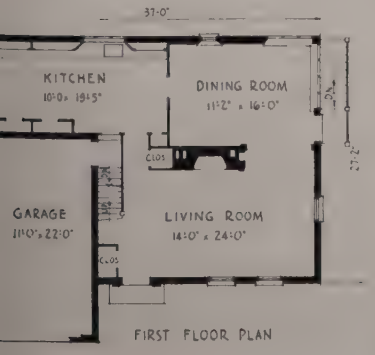
House of Dr. Francis J. Collins, Fieldston, N. Y.

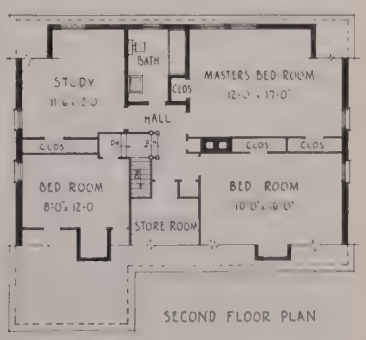
DWIGHT JAMES BAUM, ARCHITECT

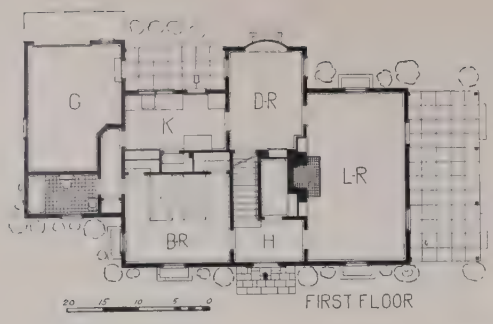
House of Arthur Yaker, Lexington, Mass.

CHARLES M. WILLIS, ARCHITECT

This house represents a very definite effort to bridge the gap between the traditional architectural vernacular of the New England countryside and the fire-safety of modern materials. The walls are of concrete blocks painted white, the roof of asphalt shingles. What exterior woodwork is used is painted white, and the green blinds and white picket fence echo the New England tradition. Inside, the block walls are furred with fiber board with the joints smoothed to afford directly a surface for wall-paper. There is a basement under the house, and its total cost was $6000







FIRST FLOOR

SECOND FLOOR

On a foundation of concrete blocks waterproofed with tar, the frame is of wood covered with shingles stained gray; roof of shingles on shingle lath, stained quite dark; windows, double-hung; interior trim, white pine, special; floors, oak; window screens, roll type; metal weather-stripping; walls insulated with mineral wool, rafters and second-floor ceiling with fiber board. Heating is by an oil-fired boiler with concealed radiation. Entrance-door paving is of flagstone; porches wood-floored.

The cubage is 33,000; the cost $7500, or 22½ cents per cu. ft.

House of J. B. Woodcock, Middletown, N. J.

JOHN T. SIMPSON, ARCHITECT

The house offers convincing evidence of the fact that the simple farmhouse type can, upon occasion, have large areas of glass windows without spoiling its exterior scale

Garage is of brick and house of wood, yet the two are well tied together by the white paint and the roof over the arcade, or, as it is sometimes called, the dog-trot

House of Leslie S. Pearl, Katonah, N. Y.

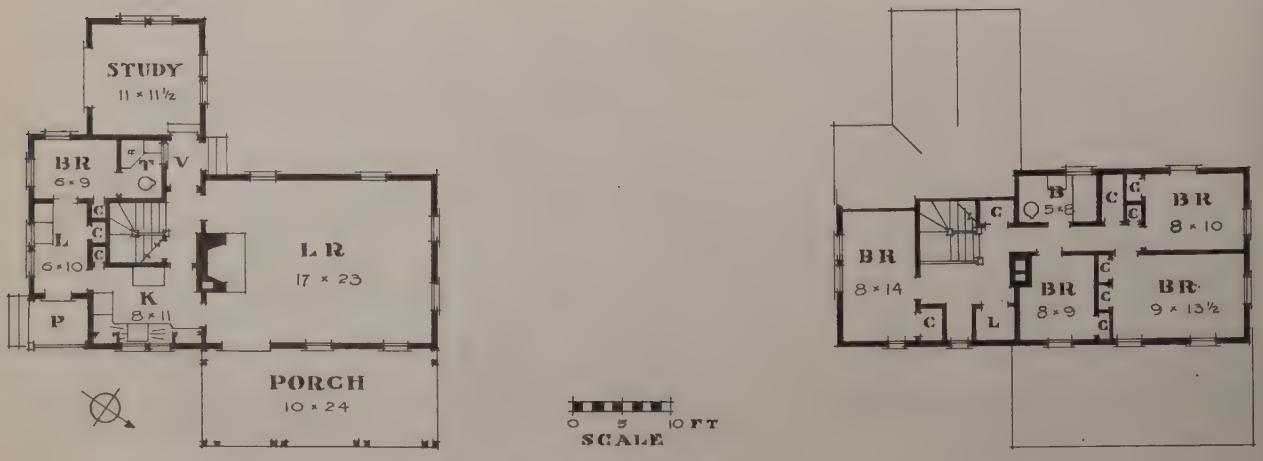
ALTON L. CRAFT, ARCHITECT

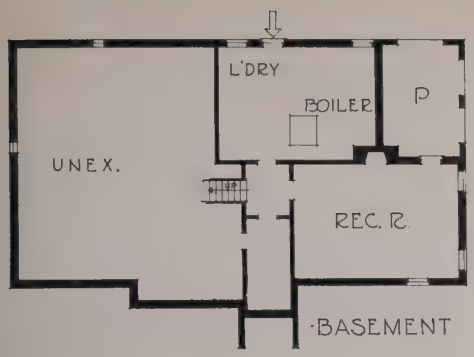
The house was designed for the family of a young minister who spends several months during the summer in the New Hampshire hills. An essential of the plan was an added study, proof against children and guests. Exterior is of gray stained shingles with green shingle roof, some green trim, and green shutters. Inside, the interior depends entirely for its effectiveness upon exposed framing of white pine, beautifully joined by two old country carpenters. The house cost $6500

Photograph by The Tinkham Studios

House of Rev. Morgan P. Noyes, Holderness, N. H.

ELISABETH COIT, ARCHITECT





Foundation walls and piers are of brick on concrete footings; framing of yellow pine; walls of common brick veneer, cement-painted; roof, composition shingles on sheathing and felt; window frames and sash, yellow pine; doors, fir; porch floors, tile on concrete; interior walls, wood lath, metal corners and two-coat sand-finish plaster; baths, tile floor and wainscot; kitchen, tile 4' wainscot; floors, oak, stained, shellacked and waxed; interior woodwork, yellow pine with semi-gloss enamel; heating by gas-fired furnace. Attic, rough floored only; recreation room, rough work only. Cubical contents, 43,600 cu. ft.; cost, 18 cents per cu. ft.

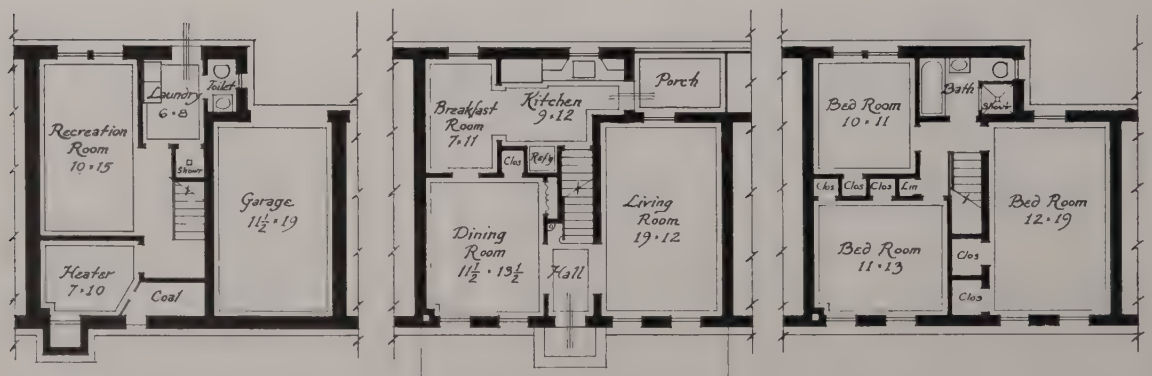
House of D. B. Alexander, Atlanta, Ga.

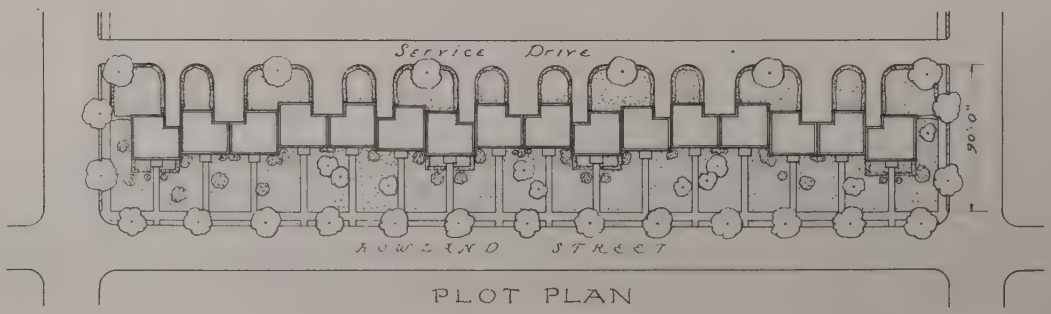
SMITH & SORRELLS, INC., ARCHITECTS

Sixteen Houses, Howland Street, Philadelphia, Pa.

FLEISHER, STEPHENS & FLEISHER, ASSOCIATE ARCHITECTS

The group was built in one operation, financed by an FHA-insured mortgage loan, and represents an effort to incorporate a better type of plan and design in Philadelphia's typical two-story row house. FHA standards (since abandoned, unfortunately) called for the elimination of the interior dining-room and interior bedroom overhead, and forced a wider lot than the prevailing 15' front. In contrast to the usual array of fake gables and imitation eaves, the façades are simple and honest. Exterior and party walls, 13" brick; wood joists; steel lintels; slate and slag roofs over rock-wool insulation. Cost, $5100 per house, including oil burner; cubage, 21,000 each house





PLOT PLAN

The Editor's Diary

Monday, March 2.—Lest this important historical fact be lost, let us set down here that America's first bathtub was built in Cincinnati in 1842. It was made of mahogany, lined with sheet lead. Local papers denounced it as a luxurious and democratic vanity. Medical men pronounced it a menace to health. A year later, Philadelphia undertook by public ordinance to prohibit bathing between November 1 and March 15. Boston went further, and made bathing unlawful except when prescribed by physicians. And taxes, then as now, were with us, for bathtubs were taxed thirty dollars yearly.

Wednesday, March 4.—At a luncheon meeting of the New York Chapter, A. I. A., today, Richmond H. Shreve, chairman of the Institute's Regional Committee on Housing, brought us up to date with respect to the activities of his committee. Its work has had to do largely with the renewed efforts of the profession to solve the problem of how the architect can design and supervise the small house. With every indication from the building graphs that small-house construction promises to form the main activity of the building industry for at least a year to come, this subject of how the architect can function in that field becomes of paramount importance. Elsewhere in this issue and the last one, these pages reflect the progress being made along these lines.

Thursday, March 5. — Andrew J. Thomas, pioneer architect in multiple-housing, addressed a meeting at The League today and, with lantern slides, reviewed the history of our efforts in New York at least to secure better accommodations, more light, more air, and less crowding on the land. The long struggle, over many years, to achieve these results appear, on the basis of Mr. Thomas's experience, to have been a constant battle, not so much against ignorance of the public as to its needs, but rather a fight against the greed and short-sightedness of those who had the money to invest in multiple-housing. It is discouraging to review the long war against the stupidity of those who had money to loan, in that they thought almost exclusively in terms of the yard-stick of coverage. The more of the land that one could cover with building, the better the investment—so they reasoned. Some of Mr. Thomas's early plans for the development of large areas proved conclusively that skillful design would bring the same number of rooms as in the previous dark ages, but adequate light, air, and planting. But this was not enough to satisfy them. If this result can be achieved, why not go further, cover the land a little more densely, and secure even more of the rentable space? The introduction of trees in the middle of city blocks was a daring innovation that smacked, to the investors, of the impractical dreamer.

Friday, March 6.—The New York Fair, whatever other effects it may be having at the moment, is certainly producing plenty of new organizations. Today at a luncheon at The League, the craftsmen came together to organize in some form of body that could, presumably, command the attention of those responsible for the Fair's material side. Architects, painters, sculptors, and landscape architects have already combined to offer their co-operative services in an advisory capacity, and the industrial designers have no intention of being left out of the picture.

Saturday, March 7.—The subject of housing for the low-income groups, through either private initiative or public works, seems to be in a parlous state. The President himself calls it "a mess." Some one else suggested the other day that housing has become a form of oratory, while slum clearance might possibly be more accurately designated at the moment by the title "throat clearance."

Monday, March 9.—Kenneth Stowell, Howard Myers, and I took W. L. Wood to luncheon today with the purpose of exchanging among ourselves the differing points of view and methods applying to architectural publications in England and in America. One of the widest differences in conditions between the two fields lies in the attitude of the publisher toward the advertiser. Mr. Wood says that abroad they do not quote figures of circulation—they merely tell the prospective advertiser that if he will look in the various architectural offices, he will find their publications in evidence. Over here, many men are busily engaged in preparing graphs, surveys, geographical distribution charts, and other like devices to prove and elaborate the certified circulation figures of the Audit Bureau of Circulations. Incidentally, Mr. Wood told us that he has had on the front cover of *The Architect and Building News* at least one advertiser whose copy has appeared there since the publication was founded some half-century ago. Here our advertising departments strive mightily to secure an advertiser for one issue; in England they discuss two-year and three-year periods rather than single insertions.

Thursday, March 12.—Those of us interested in drawing for its own sake had an unusual treat tonight at The League, when Alexander Iacovleff demonstrated, with a model, the elements of his technique in drawing from life. Iacovleff, who has been teaching at the Boston Museum School, has no use whatever for the plumb bob, center line, method, contending that this merely results in a flat representation of outline. Moreover, this outline is constantly changing, not only in itself, but in its distance from the plumb-bob line, since no model can hold a rigid position. His method, on the other hand, consists in indicating very roughly the elements of the figure as volumes—much in the way that a child joins together a small circle, a larger circle, and the dependencies. These volumes are then studied and modelled, rather than merely outlined, with constant reference to the articulation of all the joints, the functions of muscles, lax or at work. Mere outline, the chief goal of so many who draw the human figure, is the last thing sought or set down by Iacovleff. After modelling a head, chest, or arm as a volume in space, the outline comes last as an inevitable result. Iacovleff works almost exclusively in sanguine crayon, using the flat of it for his shadow masses, and incredibly small bits as it progressively breaks up, to achieve his marvellous results.

Saturday, March 14.—The Architects' League of Northern New Jersey apparently looks with no great enthusiasm upon the efforts stimulated by various A. I. A. Chapters to find some practicable means of extending technical aid to the prospective builder of a small house. They fear once more for the interests of the architect in the suburbs who designs small houses and whatever else he can get. If New Jersey disapproves, it would be interesting to know what New Jersey proposes—surely not a continuation of the present state of affairs wherein possibly 80 per cent of the really small houses are built without architectural advice.

Monday, March 16.—Up to the Fine Arts Building to see the opening of the National Academy of Design's one hundred eleventh annual exhibition—on the whole, a good show, particularly, it seems to me, in the division of etchings and prints. Gerald Geerlings senses, in that there are decidedly more than the usual number of snow scenes, an indication of the fact that we have had a real old-fashioned winter.

Tuesday, March 17.—Judge Leonard C. Crouch, of the New York State Court of Appeals, adds another stone in the structure of the public's right to better housing. In an opinion handed down today, the constitutionality of the Housing Authority Act is upheld. While admitting that "nothing is better settled than that the property of one individual cannot, without his consent, be devoted to the private use of another, even when there is an incidental or colorable benefit to the public, the facts here present no such case. In the matter of far-reaching public concern, the public is seeking to take the defendant's property and to administer it as part of a project conceived and to be carried out in its own interest and for its own benefit."

Wednesday, March 18.—Oscar B. Bach, whose knowledge of metal working is constantly attested by his works, has developed a method for producing stainless steel in colors. The samples, which are on exhibition at PEDAC, indicate that this is no enamelling process or anything like a coating of some other material; it is evidently a chemical action—possibly oxidation of the steel itself—on the surface. Bach says that he can produce any color in the spectrum, and he is a man not given to idle boasts.

Friday, March 20.—Benjamin Betts, who is helping Purdue University in its efforts to find out something about materials and maintenance of the house of moderate size, tells me that our Diary note of December 6 was apparently written under a slight misapprehension. Betts says that the Purdue Housing Research project is exactly what its name implies—a research project. It is not being built for the scientific staff of the university; members of the staff may live in the houses *for* the project. The houses are being built to find out something. Therefore, people must live in these houses. By having members of the scientific staff do this, the project is assured of sympathetic tenants who are themselves interested in research. These tenants will be willing and able to keep records and reports that the average layman might not do. In a word, staff occupancy is not the important thing; research is.

Saturday, March 21.—The Editor's mail is always a varied and usually mildly surprising accumulation, but this morning there is a really rare item in it. A young lady writes from a western university, telling me that she is a senior student in architectural engineering, expecting to receive her degree in June. In addition to her architectural training, she has had seven years of secretarial experience. Her aim after graduation is to secure a position in which her work will be largely secretarial, but in which the technical training in architecture will be a distinct advantage. There is specialization for you. I should think that a capable secretary who knows what working drawings are trying to say, and to whom the text of a specification is not an assemblage of unknown terms, would be a rare find for some architectural office. Well, I have the lady's address if anybody wants it.

Tuesday, March 24.—Faber Birren was telling me today how he came to put purple cloth on billiard tables—one of the startling innovations in the recent championship matches. Birren says that he tested out various colors with a pair of binoculars to see which colors receded from the normal plane, and which colors advanced. Yellow was one of the colors that stayed put, but of course one couldn't make billiard-table cloth yellow—unless one used black balls. Gray would have served, but was abandoned in favor of the purple, for æsthetic reasons. Hoppé, who won the championship, likes the purple cloth. The runner-up is not so sure about it.

Thursday, March 26.—Some interesting early history of the Washington Monument is coming out of *The American Guide* project of WPA. Dollar contributions provided the money to build the Monument after Congress had voted for such a tribute on August 7, 1783. It was not until 1848 that enough money had been collected to start building. The original plans provided for an Egyptian shaft to rise 700 feet above a circular Greek temple 250 feet in diameter and 200 feet high. Above the main entrance, a quadriga would have presented a colossal figure of Washington, clad in a Roman toga, standing in a chariot driven by an Etruscan Victory, and drawn by Arabian horses—pretty much of an international mélange. The temple feature was first abandoned, and other alterations were made as the work proceeded, with the masonry finally reaching a height of 174 feet. The design of Robert Mills did not really crystallize until forty-three years after the first design had been accepted, and thirty-one years after building had begun.

When the money was exhausted, citizens of Alabama asked that they might be allowed to contribute stones in lieu of cash. The Washington Monument Association accepted the idea, sending out a general call. Emperors, kings, states, nations, organizations, and individual citizens responded, and each stone bore an inscription with the name of its donor and the date of its presentation. Fortunately, these are on the *inside* of the shaft, where the inscriptions may still be read. The exterior of the shaft is of Maryland marble, except for a band of Vermont marble from 174 to 200 feet above the ground, this work having been finally completed with funds voted by Congress nearly a hundred years after the first official action.

Saturday, March 28.—Too many of the popular magazines are suddenly becoming house conscious, with the result that they are straying into absurdities, that may do an untold amount of harm. John T. Flynn writes an article for *Collier's* of March 28, on "A Good Place to Live," which, if it does its job of selling plans at three dollars per set, is likely to break the hearts of many prospective home builders. The article is of the type becoming more and more common these days, in which the author marvels at the fact that architecture has been practised heretofore in a totally wrong manner, and is now to be saved by the fact that a few rare souls have suddenly discovered that the architect's reasoning, if inverted, will save us. There is the now familiar twaddle about "planning from the inside out," the "machine for living," the necessity for "a plan that works," and all the rest of it. The prize statement, however, is that of *Collier's* editorial staff, which says at the end of the article: "The architect's work on this house is done. You can get a set of complete working drawings and specifications for your builder for three dollars." It would be amusing, if it were not so tragic, to attempt to visualize just what the ordinary run-of-the-mine builder would do with a set of drawings of this house, unhampered by supervision. And it all, we are told, will cost you somewhere between $12,000 and $16,000, including terrazzo floor, glass-block partitions, steel beams, insulation, air conditioning, and all the gadgets. Well, we are buying a set of plans to find out some more about it.

Monday, March 30.—For a day or two I have been examining plans and photographs of small houses. Why is it that perhaps one architect in thirty takes the trouble to indicate on his plans the points of the compass? I should hate to think it might be because he is not altogether satisfied with his disposition of rooms in accordance with the orientation.

NEW HOUSEBUILDING TECHNIQUES

Introduced by the technical survey made and reported by the FHA, which was printed in ARCHITECTURE'S *November and December issues, we purpose reviewing in detail these new methods and materials. A snap judgment among them is impossible. For the present, all we can do is to present the new systems. Their ultimate acceptance or rejection will depend largely upon your faith in their merits and your willingness to submit them to the test of use—"the proof of the pudding . . ."*—EDITOR.

Modern Construction in Brick

BY NORMAN F. MacGREGOR, JR.

THE new housebuilding techniques that we have presented heretofore in this series have embodied, for the most part, radical departures from the accepted methods of construction. And justly so, for we are living in an era of change, and it is only logical that machine production should affect our dwellings, even as it has gradually revolutionized our work-a-day habits of life. The demand of today is for a cheap fireproof house, solidly and permanently built, and if prefabrication or quantity production of unit parts can enter the field, and supply a more serviceable and durable product, there is no reason why architects and laymen should not accept the newer standards and evolve from them an architectural style expressive of our civilization.

The tendency in the building field, however, is generally toward conservatism, and traditional building materials maintain a remarkably strong hold upon public consciousness. This is governed by more fundamental causes than mere æsthetic standards, for there is the ever-present question of investment values, involving durability and resale factors, coupled with the problem of harmonizing existing possessions with a new architectural background. The great mass of humanity has not risen above the herd instinct, and the tendency is to watch and wait for the more individualistic spirits to prove the pudding.

But durability, fire-resistance, cheapness, and traditional feeling are difficult factors to combine, and low-priced dwellings bound by these qualifications present a serious problem for the designer and builder to solve. It can only be accomplished in one of two ways: either by applying new methods to old forms, or by using traditional materials in a more progressive way, thus bringing about a gradual evolution of new building concepts.

Brick provides an extremely adaptable medium for experimentation of this latter type, for its record of performance from earliest times and its general acceptance by practically every period in history often make it a first thought in small-house work. It requires no sales talk to recommend it, either to the architect or to the layman. It seems sure.

But contemporary construction methods, using the material for either solid or veneered walls, overlook many of its salient features, and run up construction costs proportionately, making it almost prohibitive where cheapness is a factor. In the first instance, 8″ or 12″ walls develop strength far in excess of that required by any load to which they are subjected, and in the latter case a constructional material, capable of bearing an independent load, is used primarily as a facing over a structurally complete wood building.

THE 8″ RIBBED WALL

The 8″ ribbed wall, as proposed by J. H. Hansen, of the Brick Manufacturers Association of New York, goes far toward minimizing these two difficulties by eliminating all useless material, thus reducing construction costs without impairing the quality of the wall. To all intents and purposes, the exterior appearance of the building remains unchanged, although the method of laying the bricks tends to develop a unique bond that produces an interesting surface pattern. The actual principle, however, is a distinct advance over older methods, being fundamentally an integral frame construction in brick (see Figure 1). In many ways, it may be described as a development of the veneer wall, the regularly spaced ribs replacing the inflammable studs, but sharing their work by reciprocal action with the facing bricks, which also act as a bracing and obviate the necessity of sheathing.

In plan, the vertical ribs divide the wall into a series of boxlike compartments, that may be utilized for running pipes, wiring, ducts, etc., and that provide an air space for insulation. These are closed, top and bottom, by reinforced horizontal ribs or beams that are corbelled out from the interior wall face at floor levels, windowsills and wall heads. These act as fire stops, seal the air spaces effectively, and provide ties as additional lateral bracing.

The strength and durability of a masonry wall depends, in large measure, upon the mortar work, and it is interesting to note that a 1:2:9 cement, lime, sand mortar, by volume, is recommended, which indicates the potential strength developed by the constructional method itself. Waterproofing may be applied to the inside face of the entire wall, or only on the ribs.

The interior face may be finished with either plaster or insulating board. In the former case, the metal lath is applied by fastening it with clips previously set in the mortar joints of the ribs or to metal furring strips to avoid any possible risk of seepage; while in the second instance, the wall board is attached to the ribs with a plastic cement, or by special clips for bevelled edges. The use of an insulating board, however, involves a special problem, for it is impossible to arrange the spacing of the ribs to coincide with the standard sizes of the wall board. In most instances, therefore, an economical solution is best attained by running the material horizontally to minimize waste. In all cases, the method provides for a finished wall

completely free from any inflammable material and without recourse to nails.

The chief advantage of the system is, of course, the cheapness with which it provides a fireproof wall. Estimating the cost per sq. ft. we find:

	Cents
8 to 9 bricks at $12 per M.	9.6
.085 cu. ft. of mortar at 24 cents per cu. ft.	2.1
Labor on brick and mortar at $14 per M.	11.9
1 sq. ft. of metal lath at .04 cents	4.0
1 sq. ft. of plaster at .05½ cents	5.5
Miscellaneous	1.0
Total	34.1

This cost may be reduced by the use of wall board, or increased by the use of any desired insulator in the air spaces.

Nor is the cost of construction increased by the necessity of training workmen in the uses of new techniques, for any skilled bricklayer should be able to follow the idea immediately, and once the first course of bricks is laid, the rest follows automatically. The fact, too, that only one type of material exists in the construction eliminates any danger of cracks due to uneven contraction and expansion. The system, moreover, is completely versatile in its arrangement, and can be applied to any problem where the wall provides sufficient bearing strength.

While any type of floor construction may be used in conjunction with this wall, the most satisfactory would perhaps be a new fireproof floor recently perfected by J. H. Hansen and Odd Albert. This consists of a single layer of common brick laid flat in a bed of stiff mortar on top of ribbed metal lath, a stock item. It is quickly and easily built, excessively strong, and more economical than any of the generally used constructions except, of course, the nonfireproof wood floor.

The ribbed metal lath, weighing .86 lbs. per sq. ft., acts both as form and positive reinforcement. It is laid across the bearing members, which may be steel or concrete beams, or load-bearing walls, and clipped into place with steel clips (see Figure 2). A 1″ bed of stiff mortar is then applied evenly over the surface and on this, the bricks, spaced ½″ apart on all sides, are placed. Quarter-inch negative reinforcing bars, running at right angles to the bearing members, are then dropped into place between each row of brick, giving a spacing of 4½″ center to center. The floor is completed by pouring a thin mortar grout between the joints. When this is hard, the floor may be polished and waxed to a finish, or it may be covered with hardwood on mastic.

The construction is independent of skilled labor, as the simplicity of each operation permits common laborers to perform the work as efficiently as masons, provided the unions will permit. Openings can readily be made wherever necessary by leaving out bricks and filling the joints around the aperture with a stiff mortar before pouring the grout.

Tests have been conducted on slabs over short and long spans at New York University, under the sponsorship of C. T. Schwartz of the Civil Engineering School, to determine the strength attained by the method. In the first series of experiments, performed on 30″, 36″ and 40″ spans, only one slab could be broken, failure occurring, in this instance, under a load equivalent to 1120 lbs. per sq. ft., uniformly distributed; while a second specimen, loaded with all of the available material, refused to fail or show signs of excessive deflection under a load equivalent to 2140 lbs. per sq. ft.

The second group of tests, performed on slabs over spans of 5′, 5′ 6″ and 6′, required a slightly altered form of construction. In this case, the metal lath and the brick were used in the same manner, but negative reinforcing bars were bent as shown in photograph to provide additional positive reinforcement. Here again, the construction stood up admirably when subjected to extreme conditions, failing under a uniformly distributed load of from 651 to 839 lbs. per sq. ft. As a result of these tests, the Board of Buildings of New York City has approved the construction for both floors and roofs in non-fireproof buildings under specified loadings that may be obtained from the Brick Manufacturers Association of New York.

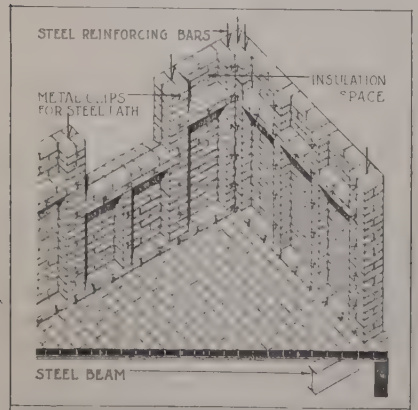
The cost of the floor averages 30 cents per sq. ft., which estimate includes the price of steel beams. This would mean an increased cost of about 13 cents a sq. ft. over a wood floor, but which would total only $78 over a 20′ by 30′ area. This added expense might well be offset by the increased rigidity which it would lend to the structure, and the decrease which it would effect in insurance rates.

All of the necessary materials are readily available in nearly every section of the country, and the construction can be carried out by almost any type of laborer without expensive equipment or tools. The work can be stopped at any point without recourse to building bulkheads and resumed without prolonged and costly preparations.

With the application of these two techniques to the small house, it should be possible to achieve durability, fire-resistance, cheapness and traditional feeling without departing from the accepted materials of the past.

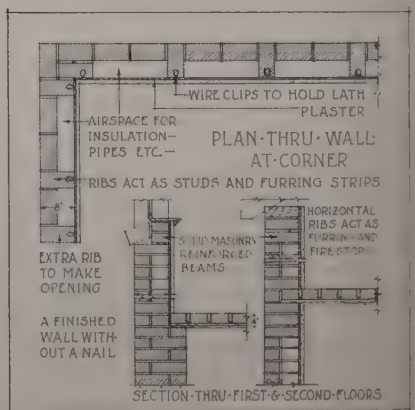
Grouting the joints of the reinforced brick slab used for floor construction, the brick having been laid in stiff mortar on ribbed metal lath

Fig. 1



ISOMETRIC·SKETCH·SHOWING·BRICK·RIBBED WALL·READY·TO·RECEIVE·INSULATION·LATH· AND·PLASTER·

Fig. 2



CONSTRUCTION·DETAILS·SHOWING·POSITION OF·STEEL·REINFORCING·BARS·AND·PRINCIPLE OF·DESIGN·

BETTER PRACTICE

By W. F. Bartels

DUMBWAITERS AND INCINERATORS

1—DUMBWAITERS

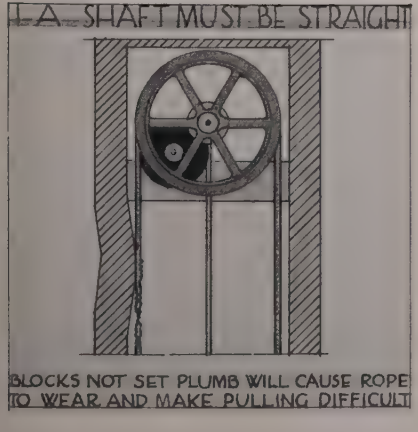
WHEN the architect specifies dumbwaiters he must take into consideration a number of factors, such as types of gears, guide rails, quality of rope, etc. Then again he may have in mind specifying the product of one of several manufacturers who produce very satisfactory machines. In any case, it is desirable that he know some of the more salient features of the machine he is installing. The manufacturers will be only too glad to give the architect specific recommendations on type, size, capacity, and arrangement of the dumbwaiters best suited to the installations planned. From long experience they have collected much data concerning such items as car width exceeding car depth to give access and the advantage of locating shaft doors in one front where possible. The architect will of course realize that a standard size car with standard equipment will cost less than any odd size or a car with special equipment. He should be careful to specify the type of machine, its capacity, its uses, by whom and how it is to be operated.

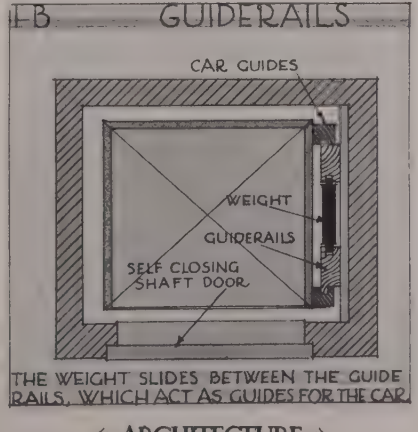
After all these questions have been settled in his mind, it will be necessary for him to go into some of the construction details which are essential for the successful installation of the machine. The manufacturers of dumbwaiters are in a position to give pertinent information concerning code requirements, relating not only to the machines and their installation, but also to the construction of the shafts in which they are to be installed. The architect should avail himself of this information, as codes in each community differ and he will thereby save himself much time. Considering the shaft first, there is no doubt that it should be fireproof.

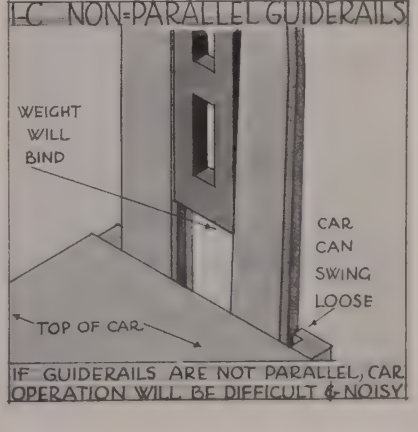
The shaft should be kept for the sole purpose of running the dumbwaiter in it and not as a passageway for wires, pipes, etc. In no case should loose wires be allowed in the shaft, because electric wires are apt to have insulation rubbed off and subsequently cause fires. The construction of a dumbwaiter shaft should never be neglected or considered wasted effort. If the shaft is not perfectly aligned there is danger that projecting blocks will cause undue wear on the ropes, as well as make the use of the dumbwaiter more arduous (Fig. 1A). Besides, if the shaft is not straight it becomes more difficult to properly align the guide rails. The mason's materials should be entirely self-supporting as well as properly bonded, whether they be brick or blocks. If the size of the car is determined beforehand and the enclosure is properly laid out, there will be no need to block the guide rails out an excessive distance in order that the car will come in the proper location in the shaft. Obviously, the less blocking the firmer are the guide rails.

The guide rails themselves are generally made of hard pine or maple. They are so grooved that the weight slides between them while the car guides fit into the outside of the rail (Fig. 1B). These rails must be perfectly plumb and parallel if the car is to work easily as well as noiselessly. If there are any bends in the rails the counterweight will bind and the car itself may even swing loose in the shaft (Fig. 1C). Then, too, if the guides do not fit the rails properly, the car may work well enough but it may be inclined to "slap" when being pulled up or down and cause considerable noise. The guides should be screwed to the blocking, not nailed.

The door bucks and frames should be lined up while the shaft is being constructed, so that in the future when the dumbwaiter is in operation all doors will center on the car when in an open position. This is essential, particularly where an electric dumbwaiter is used. The shaft should be so constructed that the machine may be readily accessible for cleaning and oiling. If easy provision is not made it provides the caretaker with a ready excuse for a squeaky machine. Where the shaft is carried above the roof it should be properly protected to prevent rain or snow getting in the shaft. If not of brick it is generally covered with metal. Flashing must be adequately provided. Where the dumbwaiter shaft does not go through the roof it should be capped by a fireproof slab, so that any fire in it could not spread to adjoining parts of the building. This is required by many local codes. The architect might remind the contractor that the shaft sides of the doors are to be painted before any whitewashing is done, or else he will find the painter painting over whitewash—a practice not very conducive to a good paint job. A guide is generally placed at the bottom of the







shaft for the pull ropes, so that they may not jump up the shaft when given too hearty a yank.

Doors for manually operated dumbwaiters should be 4′ in height to allow the operator to secure a free pull on the hand rope, and the sill should be 2′ 6″ above the floor.

The bottom of the shaft is generally provided with a door of sufficient size so that the dumbwaiter car may be cleaned. The bottom of the shaft should be of cement, pitched to the outside, so that when the cellar or floor is washed the bottom of the shaft may be easily cleaned at the same time. While it is desirable that the inside of the shaft be as smooth as possible in the interest of cleanliness, it generally suffices if the joints of the masonry are struck.

The doors should be of metal and of the self-closing type. In apartments these doors are, as a rule, hung with self-closing hinges. However, where there is limited space such as behind counters, doors are used in sliding form, either as single or double units, for more rapid operation. They may also be of the lift type where this is desirable. Where headroom above the upper floor level is scant, or it is not desired to run the dumbwaiter above the counter level, the dumbwaiter machine may be located on the lower floor. This type of installation has been satisfactorily used in stores, restaurants, and soda fountains. In most apartment types a simple snap catch is the sole guard against the doors being opened from the shaft side, but most tenants feel more secure if an additional lock or bolt is installed on the doors.

Very often, fires in dumbwaiter shafts arise from waste papers being thrown down the shaft between the normal times for their collection. Very often, too, people throw waste matter down the shaft who would not do so if they thought of its effect upon their own health. These two undesirable practices can be stopped by having locks put on the shaft side of the dumbwaiter so that the doors can be opened only by the person collecting the waste. These locks generally consist either of latches which cannot be operated from the apartment, or else a chain or rope type which when pulled taut in the cellar will not allow the doors to be opened. These protective measures are very desirable in many types of house.

The car should be one of sufficient strength to withstand all uses for which it may be employed. The rope connections to the top of the car and to the counterweight should be spliced and not tied. If cable is used, the fastenings should be made by means of approved cable clamps, which will permit the length of the cable to be adjusted if a certain amount of stretch occurs after use. Good cable clamps properly applied are better than clamp sockets in which the socketing has been done inefficiently. If the hand rope is spliced, all of the twist should be taken out of the rope before splicing, so that it will not tend to curl.

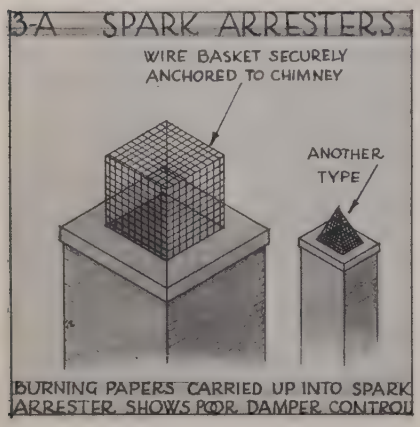
Dumbwaiter machines are generally carried on the walls of the shaft, and as a rule require no special framing unless the loads they are to carry are exceptionally heavy. Electric dumbwaiters are in reality small elevators, and the architect should carefully study their support and fastening. It is desirable in the case of these electric dumbwaiters that steel rails be used in place of the conventional wood ones used for the hand variety. The doors must be perfectly aligned, as was noted above, and they should carry all necessary and usual safety features, so that the operators may not be injured. The car should have a small light in it and the doors a pane of wire glass, so that the position of the car may be determined.

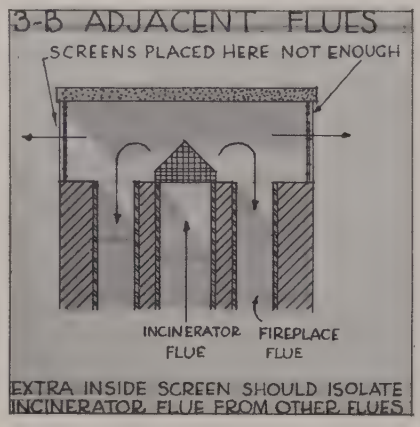
2—ASH HOISTS

Before specifying an ash-hoist opening in the sidewalk, the architect should consult the local ordinances to see just what is required, not alone to comply with the law but also to make sure that it meets with the approval of the liability insurance carriers. These openings are generally against the building for various reasons, and should provide proper protection for passers-by when open. The type of hoist, whether it be manual or automatic, should be selected with some thought in mind concerning those who will have to operate it. It is readily seen that in a building where there is one superintendent it would be unwise to install a type that requires two men to operate.

3—INCINERATORS

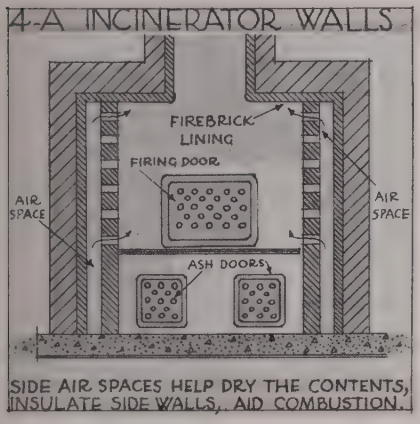
Incinerators or refuse destructors offer many advantages to the housekeeper, whether in a small one-family house or a multi-family apartment. Their aid to health and cleanliness cannot be overestimated. The labor-saving feature is as evident in small units as in large ones. Rubbish and waste is disposed of as soon as it collects. In apartments, if one collection is missed it is not

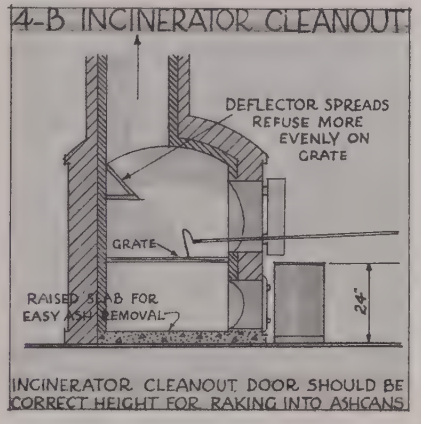


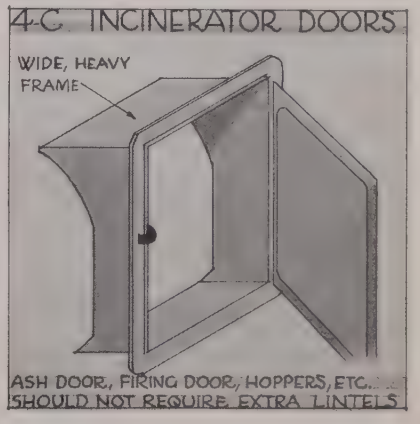


necessary to let the rubbish accumulate until the next day; one may simply make use of the incinerator which is always at the disposal of the tenant.

The architect in providing an incinerator should be very specific in his requirements. In most cases the incinerator manufacturer furnishes the necessary parts and they are erected by the mason under the explicit plans and instructions sent out by the incinerator company. The mason should be given all these details and be informed that the work is to be done in strict accordance with them. It will readily be seen that the manufacturer's representative will be unable to inspect all jobs for which they have furnished their incinerators, but this need cause no misapprehension if the work is done in accordance with the manufacturer's directions.







In laying out the incinerator, it is well for the architect to consult the manufacturer of several types, so that he may be well advised on the more essential points of the construction. The destructor should be large enough to take the accumulation of rubbish during at least one day, preferably two.

The success of the job depends upon there being enough dry material to accomplish the destruction of all material without fuel. In the ordinary private dwelling and apartment house, there is in the vast majority of cases enough dry material to accomplish this purpose. In hospitals and other institutions the quantity of wet and dry materials must be gone into, so that there will be no doubt of the unit's working. In this regard the architect should be guided by the manufacturers' recommendations for the proportion of wet and dry refuse. The combustion chamber must be laid out to the correct size. With refuse destructors, as with stoves, consideration must be given to grate areas, size and height of flues, and the proper proportions thereof. The location of the building will influence the flue. The type of refuse will affect the entire apparatus. As with a chimney, the flue should not be located so that super-roof structures affect its draft; hence it should be kept above ridges and extend at least ten or twelve feet above any surrounding flat roof. The flue detail should be passed on by the incinerator manufacturers and their approval obtained in writing.

The manufacturer of incinerators often prefers the owner to be the first one to use the incinerator if they themselves are not able to make a test of it. They feel that if the contractor puts a test on the incinerator there will be a temptation on his part to use up a lot of the waste materials left on the job and hence put a heavier duty on the apparatus than it was designed for. In fact, where the manufacturers supervise the installation, they may even put signs on it forbidding its use except by themselves or the owner.

While the architect should go into the matter of parts very thoroughly, he can easily gain the necessary information from manufacturers, who are always glad to contribute whatever data are necessary. He must decide the kind and type of hopper door, as to whether this is to be cast iron or heavy sheet metal. Then he will have to investigate the matter of hopper closers. Many local codes call for hoppers to be self-closing. If they are only counterbalanced for closing, there will of course be some noise when this operation takes place. This can be eliminated by installing a more expensive automatic closer which will work noiselessly. However, these closers should be so installed that it will not be possible for tenants to tamper with their action.

In very tall buildings damper regulators should be provided. These are placed at the bottom of the stack and are so arranged that they will directly close the flue off when the firing door is opened. These are not required in the average private dwelling, only in the tall building. If there is a strong wind the lighted matter would be carried up the flue. Burning paper in spark arresters is a sign of poor damper control (Fig. 3A). The damper control will also tend to eliminate the usual whistling in the firing room and also will be a decided factor in keeping down the flying ash. One of the most important things to be borne in mind is that the room in which the incinerator is located should be fireproofed. It should be protected by a fireproof door and there should be an adequate amount of air supplied for proper combustion. This can be done by having a manual ventilator in the door. In a certain private house, the first time the incinerator was used it was lighted by the general contractor after all the decorating was completed, just before he left the house one evening. Some large unburned paper was carried up to the spark arrester, and the smoke was forced down the adjacent flues. When the contractor arrived with the owner the next morning he was baffled as to why all the interiors were smoked—and despondent because the cost of redecorating wiped out his narrow profit. A proper spark arrester would have prevented the damage (Fig. 3B).

Spark arresters are a part of the

manufacturer's equipment which is furnished, and under no consideration should the mason fail to install this fire-preventive element. While most residence incinerators will function in the winter because the adjacent flues are warm, they may not be so accommodating in the other seasons, when rain has run down the cold flues. If possible it is well to locate the incinerator flue (*always* a separate flue) adjacent to that of the hot-water heater, because of the drying action of the heat generated.

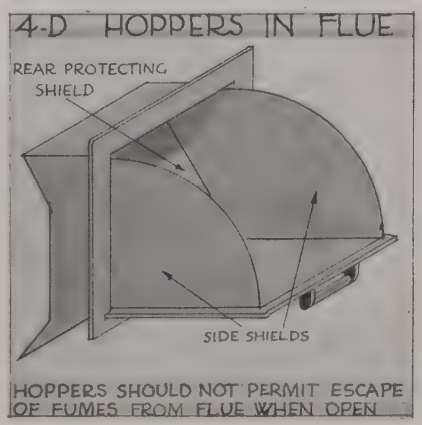
The architect is often desirous of having a flat or pitched top to his chimney, but this is not desirable from the standpoint of the incinerator manufacturer. The latter desires to have a screen exposed if possible so that a large area of it may be wind-swept. One method which will allow this and yet remove most of the basket from the line of sight is shown in Fig. 3C.

4—CONSTRUCTION

Naturally, if the incinerator is to work properly and eliminate odors it must be properly constructed. It must be treated as a chimney as far as construction is concerned, in that no beams are to rest on any part of it, but must be framed around it. The foundations should be of such depth and width that there will be no settling which would cause cracks in the upper part of the combustion chamber or flue.

Before going into details of construction, it might be well to look over the items necessary for the successful and satisfactory operation of the plant. The chief items are the thorough and rapid drying out of the refuse, together with its complete and odorless combustion. This accounts for the types which have air chambers around the sides which, besides aiding in the drying of the refuse, serve also to reduce the heat which would otherwise be transmitted to the regular brickwork (Fig. 4A). However, various manufacturers all have their own methods for accomplishing this purpose and do it very efficiently.

The hoppers or feed doors should be located in accessible places and at a convenient height. The height of the fire door should be such that the unburned refuse, such as cans, bottles, etc., can be raked directly into refuse containers. The standard container is 24″ in height (Fig. 4B). Below the combustion chamber the ash pit should have a cement slab raised to such a level that the ashes may be easily raked out and not be caught on the frame of the door (Fig. 4B). If waterproofing is used in the floor, additional precautions will be necessary so that this will not be harmed by the terrific heat developed. This may be done by laying the slab over hollow blocks, or by other similar methods. The firebrick with which the combustion chamber must be lined should be well bonded to the regular brickwork by means of headers. The firebrick should be set in fire clay and should be carried a considerable height up the flue. Above the firebrick, terra-cotta flue tile should be used. There should be no short-sighted attempts to save by skimping on either firebricks, flue tile, or fire clay. Such saving only results in potential fire danger. The sides of the flue and the chamber should be smooth, so that nothing will cling to the sides and there is positive charging action. The top of the chamber should be of such shape that it will carry itself on the walls rather than need special framing for it. If the top is made by means of corbelled brick, the projection of the brick should be slight so that there is no danger of the bricks snapping off when combustion takes place. In the smaller installation, steel members are used to support the top of the incinerator, and this exposed steel is not affected because the amount of heat generated is not sufficient to do any harm.



The flue should be perfectly vertical if hoppers open into it. Some incinerators have deflectors at the bottom so that the refuse will be distributed over the grate and have a better chance of being dried and burned (Fig. 4B).

The ash door, firing door, and hopper doors should have broad frames, so that there is no necessity for additional lintels to be framed over the openings for these doors (Fig. 4C). Also, it is essential that they be wide and of sturdy construction, so that they will not be loose in the opening. The hopper doors must be very carefully installed, or else very soon after installation they will show signs of leakage of dirt and ashes around their edges. For a multi-dwelling house the hoppers should be such that when they are opened for loading no gases can escape from the flue (Fig. 4D). Another precaution to be observed is that no wooden furring or lath should be used against the flue or near the hopper door, but only metal furring, metal lath, and cement plaster. Before the flue finally ends in the open air it should terminate in an expansion chamber, if the flue is very high. The comparatively small area of the flue as compared to the height in a tall building gives a very great velocity to the gases going up. The result is that a large amount of flying ash and partly burned papers would be carried up and then clog the spark screen if no precaution were used to slow up the rate of flow. Thus, conducting the flue through a fireproof chamber of larger size than the flue causes a decrease in the velocity, and the fine ash drops in this chamber, or baffle room, and may be cleaned out at will. Where the flue goes through the roof it must of course be properly flashed, as would any other flue or chimney. The spark screen should be one that will be able to withstand the weather, as well as the fumes which pass through it. The screen is generally made of a heavy galvanized or copper wire in the form of a square domed basket which will be fastened to a frame. It will readily be seen that this basket must be fastened so that it is possible to renew it easily and quickly for cleaning or repairing. Also there are cast-iron spark arresters which reduce the necessity for changing the basket often, the latter type being better able to withstand the uses to which they are subjected but also presenting an element of risk in that they will be more susceptible to clogging.

NUMBER 115
IN A SERIES OF COLLECTIONS OF PHOTOGRAPHS
ILLUSTRATING VARIOUS MINOR ARCHITECTURAL DETAILS

ARCHITECTURE'S PORTFOLIO OF CORNER WINDOWS

Subjects of previous portfolios are listed below at left and right of page; forthcoming portfolio subjects below

1926
DORMER WINDOWS
SHUTTERS AND BLINDS

1927
ENGLISH PANELLING
GEORGIAN STAIRWAYS
STONE MASONRY TEXTURES
ENGLISH CHIMNEYS
FANLIGHTS AND OVERDOORS
TEXTURES OF BRICKWORK
IRON RAILINGS
DOOR HARDWARE
PALLADIAN MOTIVES
GABLE ENDS
COLONIAL TOP-RAILINGS
CIRCULAR AND OVAL WINDOWS

1928
BUILT-IN BOOKCASES
CHIMNEY TOPS
DOOR HOODS
BAY WINDOWS
CUPOLAS
GARDEN GATES
STAIR ENDS
BALCONIES
GARDEN WALLS
ARCADES
PLASTER CEILINGS
CORNICES OF WOOD

1929
DOORWAY LIGHTING
ENGLISH FIREPLACES
GATE-POST TOPS
GARDEN STEPS
RAIN LEADER HEADS
GARDEN POOLS
QUOINS
INTERIOR PAVING
BELT COURSES
KEYSTONES
AIDS TO FENESTRATION
BALUSTRADES

1930
SPANDRELS
CHANCEL FURNITURE
BUSINESS BUILDING ENTRANCES
GARDEN SHELTERS
ELEVATOR DOORS
ENTRANCE PORCHES
PATIOS
TREILLAGE
FLAGPOLE HOLDERS
CASEMENT WINDOWS
FENCES OF WOOD
GOTHIC DOORWAYS

Self-supporting Stairways
JUNE

Window Heads
(INTERIOR)
JULY

Garden Enclosures
AUGUST

Church Lighting Fixtures
SEPTEMBER

Oriel Windows
OCTOBER

An Announcement:

In response to continued requests, we are arranging for the reprinting of back issues. This will take time, for we are dealing with a collection of illustrations totalling nearly seven thousand. At the moment, the subjects starred with an asterisk are available; additions to these will be made as rapidly as practicable. Subjects will be sold to our subscribers at 25 cents each — sixteen pages in loose-leaf form, postpaid. Remittance must accompany order. Order only from subjects starred.

1931
BANKING-ROOM CHECK DESKS
SECOND-STORY PORCHES
TOWER CLOCKS
ALTARS
GARAGE DOORS
MAIL-CHUTE BOXES

1931—*Continued*
WEATHER-VANES
BANK ENTRANCES
URNS
WINDOW GRILLES
CHINA CUPBOARDS
PARAPETS*

1932
RADIATOR ENCLOSURES
INTERIOR CLOCKS*
OUTSIDE STAIRWAYS*
LEADED GLASS MEDALLIONS
EXTERIOR DOORS OF WOOD
METAL FENCES
HANGING SIGNS*
WOOD CEILINGS*
MARQUISES*
WALL SHEATHING
FRENCH STONEWORK
OVER-MANTEL TREATMENTS*

1933
BANK SCREENS
INTERIOR DOORS
METAL STAIR RAILINGS*
VERANDAS
THE EAGLE IN SCULPTURE*
EAVES RETURNS ON MASONRY GABLES
EXTERIOR LETTERING
ENTRANCE DRIVEWAYS
CORBELS
PEW ENDS
GOTHIC NICHES
CURTAIN TREATMENT AT WINDOWS

1934
EXTERIOR PLASTERWORK
CHURCH DOORS
FOUNTAINS*
MODERN ORNAMENT
RUSTICATION*
ORGAN CASES*
GARDEN FURNITURE
WINDOW HEADS, EXTERIOR
SPIRES*
BUSINESS BUILDING LOBBIES*
ROOF TRUSSES*
MODERN LIGHTING FIXTURES*

1935
CIRCULAR WINDOWS (GOTHIC AND ROMANESQUE)
TILE ROOFS*
MOLDED BRICK*
DORMER WINDOWS*
ENTRANCE SEATS*
OVERDOORS, INTERIOR*
BRICK CORNICES*
SIGNS*
CHIMNEY OFFSETS*
WINDOW HEADS (EXTERIOR, ARCHED)*
UNUSUAL BRICKWORK*
SHUTTERS AND BLINDS*

1936
FIREPLACES (MEDITERRANEAN TYPES)*
PEDIMENTS (EXTERIOR)*
BALCONY RAILINGS (INTERIOR)*
GOTHIC BUTTRESSES*

Photograph by Photochrom Co., Ltd., London

Crystal Palace, London (1854)

Girls' School, Hamburg, Germany

Van Nelle Factory, Rotterdam, Holland
J. A. Brinkman and L. C. van der Vlugt

Van Nelle Factory, Rotterdam, Holland
J. A. Brinkman and L. C. van der Vlugt

School at Amsterdam, Holland
Office of the City Architect

House at Santa Monica Canyon, Calif.
Cedric Gibbons and Douglas Honnold

Century Apartments, New York City
Office of Irwin S. Chanin

Van Nelle Factory, Rotterdam, Holland
J. A. Brinkman and L. C. van der Vlugt

House at Hillsborough, Calif.
Willis Polk & Company

Country Day School, Oak Lane, Pa.
Howe & Lescaze

Interior of the above

Interior of the above

House in Devon, England
Howe & Lescaze

"Four-Fifty Sutter," San Francisco
J. R. Miller and T. L. Pflueger

Interior of the above

Interior of the above

Roerich Museum and Apartments, New York City
Corbett, Harrison & MacMurray; Sugarman & Berger

Interior of a prefabricated house
General Houses, Inc.

Interior of the above

Masonite House,
Century of Progress Exposition, 1933

Interior of a prefabricated house
General Houses, Inc.

Stran-Steel-Irwin House,
Century of Progress Exposition, 1934

Majestic Apartments, New York City
Office of Irwin S. Chanin

Interior of the above

On Fifth Avenue, New York City

Childs Building, New York City
William Van Alen

Stockholm Exhibition, 1930
E. Gunnar Asplund

Childs Building, New York City
William Van Alen

Apartment Building, Stuttgart
Mies van der Rohe

Laundry Building, Long Island City
Irving M. Fenichel

High School, San Francisco
J. R. Miller and T. L. Pflueger

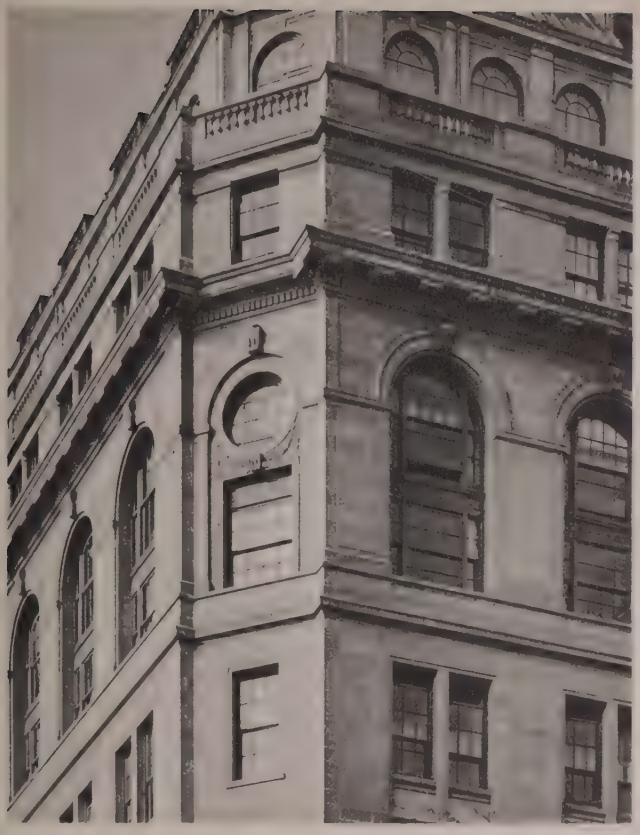
House at Santa Monica Canyon, Calif.
Cedric Gibbons and Douglas Honnold

Aeolian Hall, New York City
Warren & Wetmore

Civic Opera House, Chicago
Graham, Anderson, Probst & White

Saks Fifth Avenue, New York City
Starrett & Van Vleck

Office Building, New York City
Shreve, Lamb & Harmon



Mercantile Marine Building, New York City
Walter D. Chambers

Beekman Tower, New York City
John Mead Howells

Apartment House, New York City
Corbett, Harrison & MacMurray

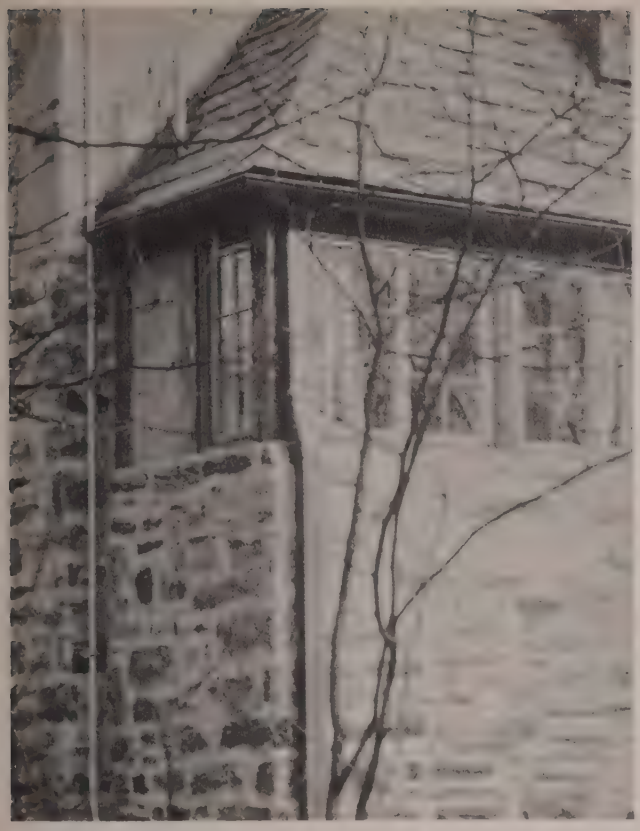
Newspaper Building, Copenhagen, Denmark
B. Hedweg-Moller

House at Hackensack, N. J.
Wesley Sherwood Bessell

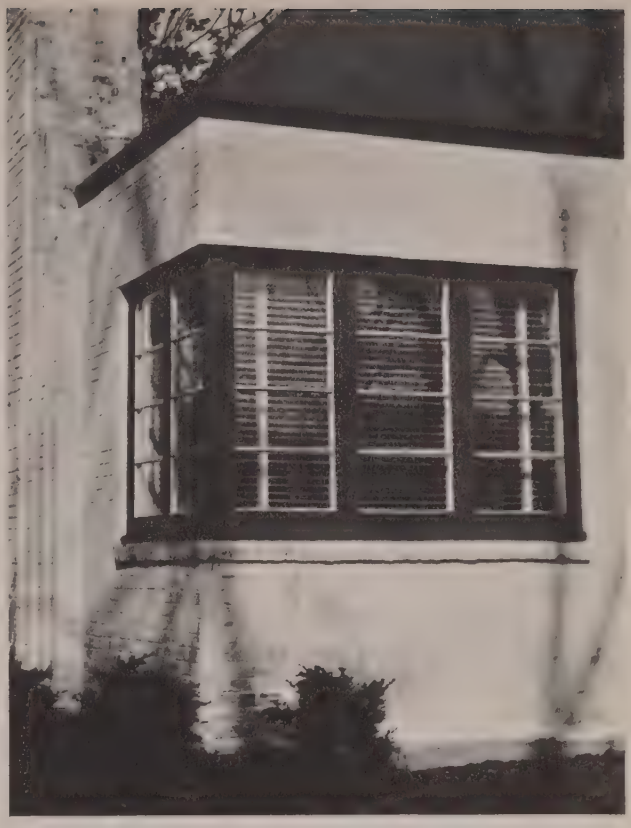
House at Scarsdale, N. Y.
Electus D. Litchfield

New School for Social Research, New York City
Joseph Urban

Old stone house in France



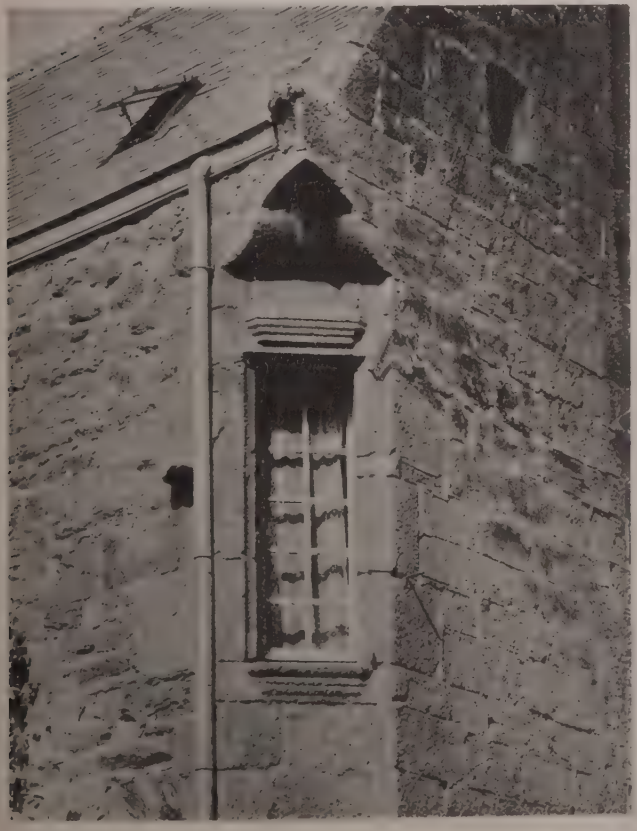
House at Wallingford, Pa.
Davis, Dunlap & Barney



House at Hinsdale, Ill.
Harford Field, Inc.

Edmond Meaney Hotel, Seattle, Wash.
Robert C. Reamer

House in Roscoff, France



Apartment Studio, Paris

School at Hilversum, Holland
W. M. Dudok

Prefabricated house, Chicago
General Houses, Inc.

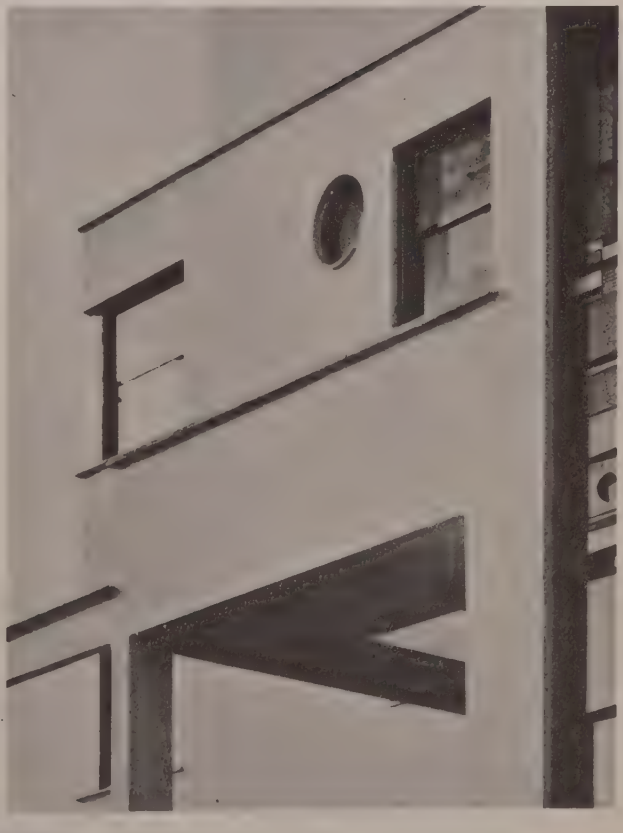
School at Frankfort, Germany
Prof. Martin Elsaesser

House at Santa Monica Canyon, Calif.
Cedric Gibbons and Douglas Honnold

House at Santa Monica Canyon, Calif.
Cedric Gibbons and Douglas Honnold

Garden House at Santa Monica Canyon, Calif.
Cedric Gibbons and Douglas Honnold

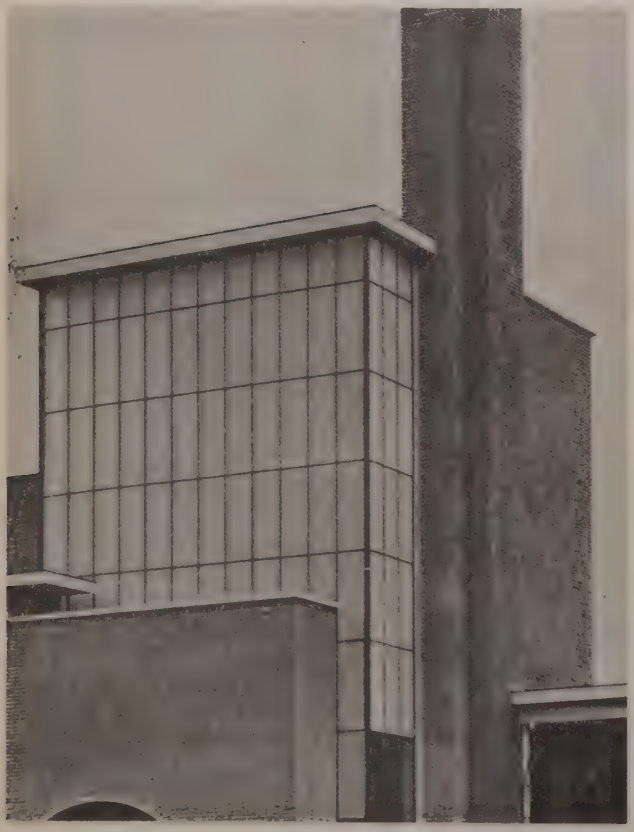
House in Paris
Ros Mallet-Stevens



Columbia Presbyterian Medical Center, New York City
James Gamble Rogers

Kings County Hospital, N. Y.
William E. Haugaard, State Architect

School at Hilversum, Holland
W. M. Dudok



Meadowbrook Hospital, Hempstead, N. Y.
Office of John Russell Pope

DESIGN *in* MATERIALS

A DEPARTMENT DEVOTED TO A BETTER LIAISON BETWEEN THOSE WHO ARE DESIGNING THE NEW AMERICA AND THOSE WHO ARE PRODUCING THE MATERIALS WITH WHICH IT IS TO BE REBUILT

The CONSTRUCTION LEAGUE *of the* U. S.

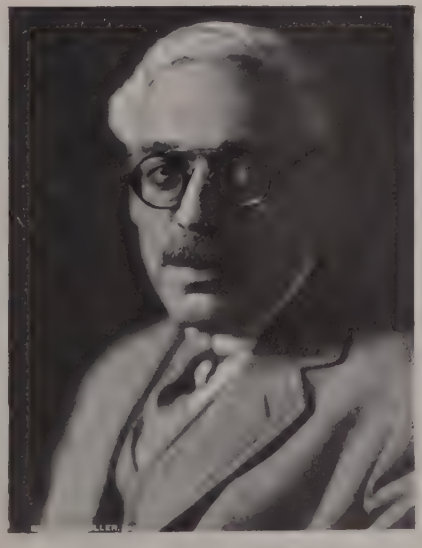
By Richmond H. Shreve

THE period in which we are living will undoubtedly stand out to future historians of American business as one of the most vital and at the same time most rapid ages of transition that organized society has ever witnessed. The approach to industrial and commercial practices is undergoing radical change; the very foundations of "rugged individualism" are being shaken to the core; and to replace it, there is emerging a concept of co-operation as a basis for human society. Selfish as the ideal may be in its original approach, imperceptible as the results may be in its present nascent condition, the ideal is, nevertheless, firmly established and, within a very short time, should show signs of an early fruition.

The movement is gradually extending from restricted organizations, limited in their membership to one profession or industry, into national organizations, all-embracive in their scope. Thus the construction industry, the second ranking economic factor in the country, responsible in 1929 for the livelihood of 4,400,000 workers, or for one-tenth of the employment in the United States, and whose far-reaching ramifications in the production and manufacture of raw materials, transportation, wholesale and retail distribution, design and actual job-site construction make it practically the balance wheel in our industrial system, organized in 1931 the Construction League of the United States, for examination of the industry's problems, and for consultation on them, in an effort to achieve a path of constructive, co-ordinated action.

The first meeting was called together by the American Institute of Architects, of which Mr. Robert D. Kohn was, at that time, president. The importance of such an organization had been made clear to him when, during the latter years of the war, he acted as chief of the Housing Division of the Shipping Board, at which time the need for quick, decisive action was rendered possible only by the complete co-operation of all of the elements of construction and industry. Accordingly, in 1920, he sought to generate this spirit in the industry as a whole, and was instrumental in forming the National Building Congress, of which the New York and other local building congresses are an outcome. The mother organization, however, was only partially successful; in the opinion of architects it failed to bring the industry together; and the overwhelming nature of its organization frustrated, in large measure, the very ends it had been created to further.

By 1931 this effort had become practically impotent from the point of view of constructive service. Consequently, Mr. A. T. North, a member of the Committee on Industrial Relations of the Institute, suggested to Mr. Kohn that he try again, this time through the medium of the national organization of the architectural profession, and taking every precaution to eliminate the mistakes that had impeded the usefulness of an earlier attempt. As a result, North's committee, headed by William O. Ludlow, issued invitations to various national organizations, to send representatives to discuss the possibility of forming a national conference board where the problems of the industry as a whole could be discussed for the mutual benefit of all. This invitation was issued with the approval of A. P. Greensfelder, president of the Association of General Contractors of America, and of H. H. Sherman, president of the Producers' Council. This new approach brought a 100 per cent response, and gave the first meeting, held at the Octagon in Washington, a very real impetus.



Robert D. Kohn, F. A. I. A., the Construction League's first president

It was agreed by all that the need of the League at that time was strikingly apparent, and it was felt that while the disinterestedness of a broadly representative group would lead to effective action, the objectives sought would be common to all branches of the industry, and would reflect equally upon all.

As a result, a membership was built up of associations, national in character, the major services or products of whose individual members formed an integral part of the construction industry. The initial assembly, held early in 1932, composed of approximately ten organizations, set forth the following as the nature and objective of the League:

"*a.* To create an agency truly representative of the whole industry through which to present the industry's viewpoint and needs to the public and the government.

"*b.* To strengthen and benefit the industry internally by furnishing an agency to work out intra-industry problems.

"*c.* To supply sound advice and criticism to the individual branches by common council and open forum

of architects, engineers, general contractors, specialized contractors, producers and dealers.

"*d.* To promote unified and cooperative plans of study, research and propaganda for the proper advancement of the construction industry in the best interests of the public."

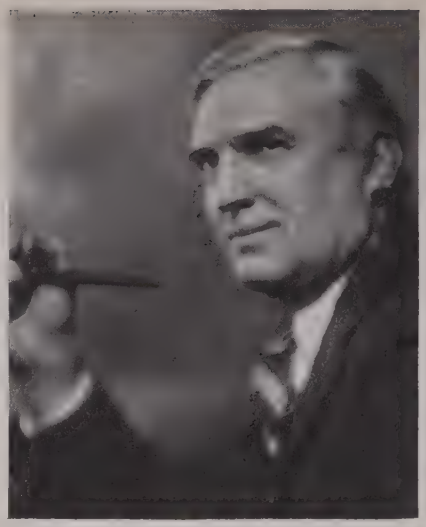
The spirit with which the formation of administrative machinery was approached is well illustrated by the passage with which the committee closed their report. "These rules do not contain the word 'shall' or any penalty. They are based on the word should, or the will to do. They recognize the principle of a premium and reward for doing the right thing in the right way. This is the principle of modern business and we must subscribe to such a principle if we would succeed in our constructive task of progress."

The difficulty of inclusively circumscribing the limits to which the term "Construction Industry" could be extended, and of providing an insurmountable safeguard against the introduction of selfish interests into League administration, provided a very real problem in the formation of an administrative program. The former was overcome by the following conclusive definition, which limits the organizations eligible to League membership and to participation in League consultation:

"The Construction Industry is that comprehensive synthesis of arts, professions, occupations and commercial elements whose major services or products are utilized in the creation or modification of structures and fixed improvements for the shelter or use of man."

Impartial opinion and just consultation has been made possible by the wise basis upon which membership in the League rests. Thus, only broad nationwide associations, such as the American Institute of Architects, the American Institute of Steel Construction, and the Brick Manufacturers Association of America, are eligible to administrative membership. Individual members of an association do not obtain membership status by virtue of the membership of their association in the League. Their interests are represented by their association. Provision has been made, however, for non-voting sustaining members.

Despite the nationwide basis upon which the League operates, and the all-embracive scope of its activities,



Stephen Frank Voorhees, F. A. I. A., the League's second president

Col. John P. Hogan, the League's third president

Richmond H. Shreve, F. A. I. A., the League's fourth and present president

wise provision has obviated any possibility of unwieldy or clumsy operative principles. Each national member association elects five representatives to the League Assembly. This comparatively small group of voting members is again cut down to facilitate wise and decisive actions, in a Policy Committee which determines and directs the affairs of the League between meetings of the League Assembly, and its activities and powers include all matters commonly within the province of a board of directors. The Policy Committee includes the League officers and two assemblymen, generally representative of each of the following branches of the industry: architects, engineers, subcontractors (four representatives; two mechanical and two non-mechanical), producers (a material and an equipment manufacturer), fabricators (a material and an equipment representative), and distributors (a material and a machinery representative), always providing, of course, that the respective branches are represented in the League Assembly.

From this body, an Executive Committee is elected, which is entrusted with the execution of the League program between meetings of the Policy Committee.

The officers who conduct the affairs of the League are elected annually by the Assembly and consist of a general chairman, two vice-chairmen, a treasurer and a general secretary.

Every precaution has been taken against the introduction of party politics and electioneering methods into the League electoral system, and against one group of members—much less one company—forwarding their own individual interests. Comprehensive and decisive by-laws, including an expulsion clause, further eliminate all possibility of partisan policies.

The opportunities for organized action which the League inculcates in its administration, the potentialities for unifying divergent elements which it possesses, immediately present themselves to the observer. Further, however, the League anticipates the possibility of a national biennial Construction Congress, a national Construction Exhibition, and hopes to co-operate with other national or international bodies in arranging joint programs, thus extending its activities to a worldwide basis.

Some idea of the possibilities of current action is given by the following general committees that may be provided for to investigate current needs:

A Plan Committee to study internationally and nationally the application of community, public utility and private plans and planning programs covering construction work of various kinds.

An Employment Committee to consider matters pertaining to various phases of employment within the construction industry.

A Correlation Committee to consider matters relative to ethical practices and co-operation of members with each other and with the public. Upon request of the parties of interest, this committee may serve as arbitrators between such members.

A Research Committee to consider matters pertaining to betterment of construction methods, materials and machinery.

A Merchandising Committee to analyze and pursue matters pertaining to betterment of construction methods, materials and machinery.

A Public Relations Committee to consider matters relative to legislation and public contacts as they affect the construction industry.

The League, moreover, may render such library and other services, issue bulletins and other publicity, and support such joint activities of the League and any member as the Assembly may at any time authorize.

Representative of the services which the League may be able to render is the formation of a special Committee on Housing, to draft a definite League Housing Policy to present to the federal government. This committee is at present studying and co-ordinating the various reports on housing by such agencies as the Chamber of Commerce, the Committee for Economic Recovery, and others. It is also authorized to take any further action necessary in connection with future legislation affecting the construction industry.

The PRODUCERS' COUNCIL

Subjects to be Discussed in Convention

By John F. Gowen
Executive Secretary

THE Producers' Council is holding its annual convention, as usual, at the same time and place as the A. I. A., that is, down at Old Point Comfort, Va. The joint luncheon of the Institute and the Council will be held on Tuesday, May 5, and the speaker, a representative of the latter group, will be Carl M. Snyder, president of Houses, Inc. His subject will be "Low Cost Housing," and his experience in prefabrication would lead one to make an unofficial forecast that he will at least touch upon this phase of the building industry.

There is every possibility that this convention may prove an important point in the development of the Council's activities and services. At any rate, a number of plans will be discussed for increased activities.

One of the most important of these is a plan for Certified Houses recently proposed by G. P. MacNichol, Jr., of the Libbey-Owens-Ford Glass Co. The project as outlined consists of registering the nature of the construction incorporated in the building, based upon a certification by the architect that the materials designated were actually used, and installed in conformity with standard specifications or accepted practice. The expense of a continuing national promotional campaign would fall entirely upon the manufacturers' shoulders, but the possibilities which it holds for better building are immediately evident.

The architect would be the pivotal point of the plan, and as a consequence would receive, for the first time, the type of public promotion necessary to establish the importance of the profession in the mind of prospective building owners.

The forward-looking builder would receive a selling implement which, if properly used, would not only reflect itself to his credit, but give him a leadership in his field.

The manufacturer would be safeguarded against substitution of unknown and inferior products and the field for quality materials would be enlarged.

The mortgagee or lending institution would have a new assurance of the value of his investment and of its sustained value in case of resale.

The purchaser or client would know, for the first time, the fundamental facts pertaining to the largest investment which, in all probability, he will ever make.

Another matter for discussion will be the activities of the Manufacturers' Housing Display Council, which has been responsible for the success of a number of housing displays throughout the country. As these feature the products of the manufacturers of building materials, it would appear that there should be some logical method of co-operation between the two organizations.

The Manufacturers' Housing Display Council was formed last November by a group of manufacturers, after a conference with Peter Grimm, Assistant Director of National Emergency Council, to discuss means of closer co-operation between the federal government and building material manufacturers.

Another proposal which will be discussed is the possibility of the Council—in co-operation with the Association of the Collegiate Schools of Architecture—preparing a comprehensive series of illustrated lectures on the manufacture, application, and properties of construction materials. The plan is made possible by the development of apparatus which synchronize photographs with voice recording. Through this medium—lantern slides and vocal description—students could receive additional practical data to supplement the regular scholastic curriculum and correlate the practical and æsthetic approach to the architectural profession.

BUILDERS OF AMERICA: Elisha G. Otis

By Benton B. Orwig

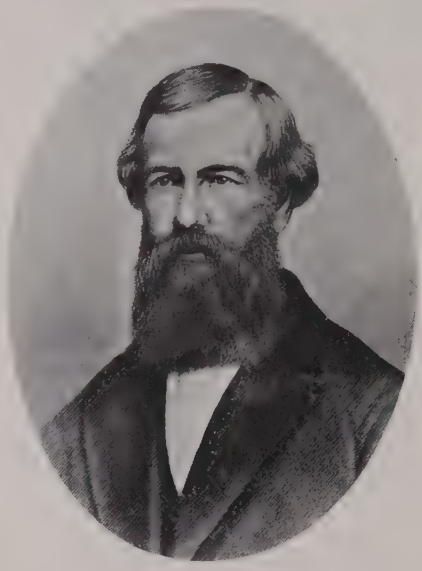
THIS IS THE FIRST IN A SERIES OF PERSONALITIES BACK OF OUR GREAT BUILDING INDUSTRIES

NOT so long ago, actually within the memory of architects now living, to plan a structure over five or six stories high would brand the architect as an impractical dreamer, chiefly because people refused to walk up too many flights of stairs. It was not until the elevator, as such, came into practical use that architects dared dream of tall buildings. In the elevator lay the inception of the skyscraper, and the most dramatic era in American building had one of its beginnings in a Yonkers bedstead factory some eighty years ago, where Elisha G. Otis built his first elevator.

In 1852, Elisha Otis was superintendent of the "Bedstead Factory" on the site of the Federal Sugar House in Yonkers, New York. An elevator was needed in the shop, so Otis decided to build one himself. Hoisting machines of various kinds had been in use throughout the ages, operated by man or animal power. Steam power was known in the latter part of the eighteenth century, but did not come into general commercial use until one hundred years later, and the steam hoists then in operation were considered very dangerous on account of the occasional breaking of ropes and the platforms falling.

"Elevator" inherently means "safety," and the word "elevator" came about when the hoist was made safe. Unlike the automobile, which was made for speed and more speed before inventive genius was applied to proper brakes, the elevator came into existence through the invention of brakes. Mr. Otis invented the elevator through his device which would grip the guide rails in case the hoisting ropes broke, and thereby made the lifts safe for passenger use, where heretofore they had been used almost entirely for lifting equipment and produce.

In 1853 came Otis's big opportunity when he exhibited this new safety device at the Crystal Palace Exhibition in New York. He gave practical demonstrations of its safety by standing on the platform at the top of the run and cutting the rope. A few wondering heads gathered about Mr. Otis while he demonstrated his machine, but the scoffers



Elisha G. Otis

laughed and incredulity was rampant. As people gathered along the banks of the Hudson to watch Fulton's *Folly* and cried "get a sail," so Otis probably heard such expressions as "walk up" or "use the stairs." We *do* know that he encountered the usual hardships that follow in the wake of every accomplishment.

In reporting this event, *The New York Tribune* of that day had this to say: "Machinery at the Crystal Palace—extending our sketches of new machinery we may commence by alluding to an Elevator, or a machine for hoisting goods, (exhibited by Mr. E. G. Otis of Yonkers, N. Y.) which attracts attention both by its prominent position and the apparent daring of the inventor, who, as he rides up and down on the platform, occasionally cuts the rope by which it is supported. There are two points in which this is superior to the hoisting apparatus in general use; first, the convenient arrangement of the 'belt-shipper,' and second the provisions for perfect safety in case of accident." *The Scientific American*, of the same period, says: "If the rope should break, the platform will be sustained and no injury or accident can possibly occur. This excellent platform elevator was on exhibition at the Crystal Palace during the past season and was much admired."

Mr. Otis was born in Halifax, Vermont, on August 13, 1811, and lived there on a farm until he was nineteen. His character and life were shaped by the rigor of his early surroundings. Brought up among the Green Mountains by frugal parents, he enjoys the same halo that surrounds most captains of early American history. Besides the land they lived on, his family's chief possessions consisted of the potter's wheel, the hand loom, the crude lathe and the rough forge.

Young Otis's first business venture was the manufacture of wagons and sleighs, in partnership with a friend. After building about twenty-five, the local market was well supplied, and so, at nineteen, he left his home and went to Troy, N. Y., which took him three days by horse and wagon. Here he engaged in making wood-turning lathes. After several years he became somewhat discouraged at his prospects, and, with $150 in his pocket, took the boat to New York. On the boat ride down the river, the steering chains made so much noise that they kept him awake all night, so he immediately planned and sketched a steam steering gear which later proved successful.

Mr. Otis then went to Bergen, N. J., where he acted as a mechanical superintendent for a furniture factory, owned by a partner in the Troy concern. Later he went to Yonkers, where the important phase of his life was to take place.

After his success at the Crystal Palace—and, despite considerable criticism, it was a practical as well as an inventive success—Mr. Otis designed and erected, in 1857, the first passenger elevator, which was located in the store of E. V. Haughtwout & Co., on the northwest corner of Broome Street and Broadway, in New York. The honor of being the first passenger elevator is sometimes claimed for the vertical screw railway installed in the old Fifth Avenue Hotel in New York about 1859, but

this claim is unfounded. As orders came in after his public demonstrations, Mr. Otis opened up shop, known as the "Union Elevator Works and General Machinery Depot" at 117 Franklin Street, New York, which was, as his circular reads, "second block West from the International Hotel and Taylor's Broadway Saloons." Among his early customers were men like B. T. Babbitt of soap fame, and Isaac Singer of sewing-machine fame. His announcement states that "Otis' Improved Platform Elevators are for steam, water, hand or other power, so constructed that if the rope breaks the platform cannot fall . . . suitable for Mills, Factories, Hotels, Hospitals, Laundries, Bakeries, Printing Offices, Book-Binderies, Sugarhouses, etc."

His smallest elevator, for lifting 500 pounds, sold for $350; his largest, for lifting 8000 pounds, sold for $750. Some of his customers included Lowerie, Hawley & Co., Nunns & Clark, Brooklyn Flint Glass Co., Passaic Mining & Manufacturing Co., Steinway & Sons, and Cox, Richardson & Boynton. He had installations in Baltimore, Newburgh, Cincinnati, Chicago, Syracuse, and even as far south as Charleston and New Orleans.

In his advertising promotion, Mr. Otis stressed the fact that "twelve men were killed in this city within four years with the old kind, and not one killed or hurt with Otis's Excelsior Elevators." His literature contained a large number of the highest personal endorsements. Mr. Otis was well known for keeping his business file in his huge pocket-book, which he carried with him at all times. He was an inexhaustible worker, of unquestioned honesty, and had all the personal qualities of the inventor. Besides the elevator, he applied for patents on a rotary bake-oven, a brake for freight cars, and a lift-bridge. He was more of an inventor and engineer than a business man, and died leaving little except his business.

Mr. Otis married twice and had two sons by his first marriage, Charles R. and Norton P., who carried on with the business after his death under the name of Otis Brothers & Co. A grandson, Sidney Otis, is now active in the business. Elisha Otis's life outside his business was relatively uneventful except for his ardent support of the Abolition Party. He was a personal friend of John Brown and, strangely enough, had a striking likeness to Brown. During a trip South, he was mistaken for John Brown and was arrested in Charleston, W. Va., and kept under guard for some time, until friends proved his identity.

On the same day, in April, 1861, that the Southerners trained their guns on Fort Sumter, Elisha Otis died, at the beginning of the era of great building in America. His sons carried on his business in Yonkers, and in 1872 the first geared hydraulic elevator was installed, and they soon developed this type with speeds that made twenty-story buildings feasible. Later they experimented with the electric elevator in collaboration with Rudolph Eickemeyer (one of the pioneers in the development of the electric motor) who at that time had taken into his shop a young immigrant by the name of Charles Steinmetz, who was later to become world famous in the field of electric development.

The first successful electric elevator was installed in 1889 by Otis Brothers and was operated successfully until it was removed thirty years later when the building was torn down. Improvements were continually made on the electric elevator until the latest great invention in 1924 brought into use the Otis Signal Control Elevator, making possible speeds from 700 to 1200 or more feet per minute. From its crude beginnings in Yonkers, the organization started by Mr. Otis now covers the world as the Otis Elevator Company and its associated concerns.

The building industry owes a great deal to the genius of Mr. Otis and his successors, as it is self-evident that elevators, and the progress in steel construction, have made the skylines of today possible. Every day in New York City more people ride on elevators than use subways, elevateds, and buses combined.

PAINT: Its Modern Technology

By C. Richard Forrester

PAINT may be defined as a self-hardening, adhesive fluid consisting of particles of pigment suspended in liquid, which will form a decorative or protective coating on the surface to which it is applied. Until the beginning of the century the architect knew and specified the component materials as lead and oil. They had been in accepted usage for hundreds of years, and the substitution of any other material would have been little short of heresy. In the brief period of a generation, many new materials have been introduced, until today the task of selecting a paint for a given surface has become a very specialized matter.

The change began when individual enterprise undertook to supplant dry ground pigments, or pigments ground in oil, with a ready-mixed paint sold in cans. The problem of preventing the different materials from separating, due to their varying specific gravities, or from hardening, necessitated research, and the first step, accomplished by Americans, was made with the discovery that silicate of soda, mixed with the linseed oil, permitted a permanent solution. That zinc oxide has since displaced the silicate of soda for this purpose is of little importance. Ready-mixed paints had been made a practical reality, and manufacturers were soon thrown into keen competition, each striving to improve his own individual product.

The second step was fostered by the quantity of lumber employed in American architecture. The historic use of paint has based its importance upon decorative effect, which was only natural, for brick and stone, the principal European building materials, were of a permanent nature. In this country, however, a superabundant supply of timber had made wood a very important structural element indeed, but one which deteriorated upon exposure. The manufacturers were quick to see the importance of this, and began to emphasize the use of

paint as a protective rather than a decorative coating. The introduction of iron and steel into the building world augmented this need, and a demand was created for specialized paints and permanent finishes. This demand, coupled with the discovery of synthetic products, and the addition of "trade names" has been responsible for the complication of the field today. The architect can no longer specify paints with the old assurance of positive knowledge, and the need has arisen for a modern technology sufficiently broad to embrace the entire range of paints, but at the same time simplified to an easy working basis.

Analysis of Paints

All paints may be reduced to a similar analysis. They consist of:

1. The pigment.
2. The vehicle or liquid conveyer which latter may be broken down into three component elements:
   (*a*) The drying oil.
   (*b*) The drier.
   (*c*) The volatile thinner.

The Theory of Paints

Again, all paints have a similar theory, and it is only the different materials used to fulfill the various functions which make one preferable to another, either in finish or protective quality, for a given purpose. The drying oil provides a binder for the pigment, the drier accelerates the action, and the volatile thinner is provided to give the paint the required consistency for ease of application. This latter evaporates almost immediately from the painted surface, and leaves behind the pigment and oil mixture as a wet coating. The oil, absorbing oxygen from the air, gradually dries into an elastic skin which adheres firmly to the surface and holds the pigment in place.

The Pigment

The pigment is responsible for not only the desired color, but for the covering capacity of the paint as well. Indeed, the body and durability of the paint is largely dependent upon the pigments used, for while oil is often referred to as the life of the paint, this is not altogether true. An oil film has very little durability, and the pigment added to it is largely responsible for its hard surface and its resistance to air and water.

White, which is the weakest and most perishable of all the colors, is the only pigment of real concern to the architect, for the time-honored use of white lead has given way very considerably because of its many disadvantages. It is extremely poisonous, dries soft, is prone to chalking, darkens with age and becomes discolored when exposed to the fumes of sulphuretted hydrogen, which exists in the atmosphere of most cities. It is rapidly being discarded as a pure pigment, but its obscuring powers and smooth flowing qualities have maintained for it a place among the white pigments when used in conjunction with another that neutralizes its disadvantages.

The search for superior materials has brought into common usage zinc oxide, lithopone, titanium white, and white oxide of antimony. Of these, zinc oxide is the best known, and it has been proved to be a very adequate and satisfactory substitute. It is of a purer white than the lead, and has superior spreading powers, but it is not so opaque. It is very frequently used with white lead.

Titanium white is the most promising of the new pigments. Introduced into the paint world in the second decade of the present century, it has already come into prominent use, due to its high opacity, which exceeds even white lead, and to its remarkable permanency. When used with zinc white in a vehicle of heat-treated linseed oil or wood oil varnish it provides an excellent and durable paint, suitable for exterior use.

Inert Fillers and Extenders

Paint manufacturers have been prone to cover up their use of inert fillers and extenders, and in consequence they are considered by many as a diluent of the pigment. This is not altogether true, for nearly all mixed paints contain at least a small proportion of them, and they are used to fulfill a very definite purpose. In some instances, a pure pigment is too light to supply the proper body, and in other cases the reverse is true. Again, the pigment may be too costly or too concentrated to use alone. Inert fillers and extenders in commercial paints cannot be considered as dishonest substitution, therefore, unless they are used in excessive quantities, which frequently happens in so-called "second-grade" paints, for they have been found necessary; and while they may, and often do, reduce the cost of the paint, they frequently improve the quality and practicability. The principal inert fillers used are: barytes, barium sulphates, kaolin, charcoal, barium carbonates, white mineral primer, silica, asbestine, gypsum, clay.

Reputable manufacturers test the durability of their product on "paint farms," under actual weather conditions

The Vehicle

The drying oils are limited in quantity, for while nearly all oils are waterproof, there are few that will solidify into a hard, permanent film. This quality is the basic requirement, and the oils that possess it are known as fixed oils.

Linseed is the oil most frequently used for this purpose. Heat-treated and blown linseed oils are sometimes

added to increase the durability and wearing qualities of the paint. Flax and poppyseed oils have the same oxidizing properties but their cost has retarded their general use.

Another widely used vehicle is Chinese wood oil (Tung oil) varnish, obtained from the wood oil tree in China, and it is used in the preparation of paints that dry with a high glossy finish. Fish oil, obtained from menhaden, and refined, is sometimes used as a substitute for linseed oil.

While linseed oil dries by oxidation, siccatifs are usually added to accelerate the action. There are two classes of such driers, oil and rosin. The former are manufactured by heating linseed oil with a salt of oxide of lead and manganese to a very high temperature and then reducing the mixture with turpentine or benzine or both. The latter, also called Japan driers, consist of various metallic salts or bases fused with rosin or linseed oils and reduced with benzine or turpentine. This type is usually considered to be inferior.

Turpentine is the volatile thinner in most frequent use, but benzine or benzol have been extensively used to replace it. The latter acts both as a diluent and a liquid drier and is very much cheaper to use but does not necessarily produce an inferior product.

General Classification of Paints

The paints available on the market, and often disguised by "trade names," can readily be reduced to the following general classification:

1. Oil paints.
2. Enamel or varnish paints.
3. Flat paints.
4. Anti-corrosive paints.
5. Cellulose paints.
6. Metallic paints.
7. Fireproof paints.

Oil Paints

Oil paint is the good old-fashioned, garden variety of house paint, seen and used every day both for interior and exterior work. It dries with a medium or low gloss finish, and is dependable and durable under nearly all circumstances. It is the direct descendant of the universal lead and oil of a generation ago, and it still uses the oil vehicle. Its adaptability for interior and exterior use is governed by the pigment employed and by the proportion of oil and turpentine which it contains.

Enamel or Varnish Paints

This type is made by grinding the pigment in a varnish vehicle. It can be divided under two headings, dependent upon the medium used.

1. Rosin varnish enamels.
2. Copal varnish enamels.

The enamels made of the rosin varnishes dry with a high glossy surface, in from two to four hours, but are brittle and non-durable, except for interior use. The second type are slow drying, taking from eighteen to twenty hours, but they stand up under the severest conditions. They have a similar finish to the rosin varnishes, but are suitable for both interior and exterior use.

Flat Paints

Flat paint is technically a flat-drying enamel, and differs from the copal varnish paints in that it contains less varnish and more turpentine. They dry with a pleasing mat finish, often enhanced by the addition of wax to the vehicle, but are suitable only for interior use.

Anti-Corrosive Paints

This type falls under a number of different headings, and is used primarily for protecting iron and steel from rusting. The best known is undoubtedly red lead mixed with linseed oil. Until recently this type had to be prepared immediately before using, as the red lead settled into a hard mass upon standing, but recent investigations have developed a permanent red-lead paint.

Nevertheless, this material is rapidly being replaced by graphite, red oxide, and basic sulphate of lead paints. They have excellent anti-corrosive qualities, and are cheaper to use. They are made of an asphalt or bitumen base dissolved in a solution of naphtha or coal tar. They are usually black, but the introduction of a strong staining pigment allows of other colors as well.

Cellulose Paints or Lacquers

These lacquers consist of a pigment suspended in a vehicle made of nitrocellulose dissolved in suitable solvents. They are quick drying, tough and durable, and are not affected by moisture, steam, or extremes in heat and cold. They may be used on all woodwork, old or new, metal, and on furniture, floors, and walls. Their popularity has been very much augmented by their quick-drying properties, and they are almost invariably used where it is necessary to finish work expeditiously. They are highly inflammable.

Metallic Paints

Metallic paints are prepared by mixing finely powdered metals or their alloys with a copal or celluloid varnish. In the past they have been used primarily for imitative purposes, but aluminum paint is rapidly coming into favor as a protective undercoating for wood and metal. They are heat resisting, and in this connection it should be remembered that they reduce the heat-diffracting index when used on radiators, pipes, etc., as an outer coating.

Fireproof Paints

Fireproof paints are at best mildly fire retarding, and consist of an ordinary oil paint containing a proportion of fine asbestos, borax, sodium tungstate, or other fire-resisting materials. They are manufactured for use on inflammable surfaces, such as composition board and wood, but as they protect only the surface they do not prevent the interior from burning if subjected to sufficient heat.

In its final analysis the paint field is not nearly so complicated as it might seem. The principal difficulty occurs where unscrupulous manufacturers substitute unproven or even inferior products to cheapen the costs of "second-grade" paints. No danger could be easier to obviate. Reputable companies maintain technical laboratories for experimental purposes. Complex tests are carried on with accurate scientific instruments: gloss, drying time, elasticity, water resistance, and durability are all computed by mechanical means.

As further protection against an inferior product, proving grounds are maintained throughout the country, where painted panels may be tested under actual climatic conditions, and the finish studied to determine its endurance under actual weather conditions.

Thus, if the task of the architect in specifying paint requires more thought than it did a generation ago, he has gained, nevertheless, an assurance of a more lasting and satisfactory job, with a wider gamut of decorative finishes.

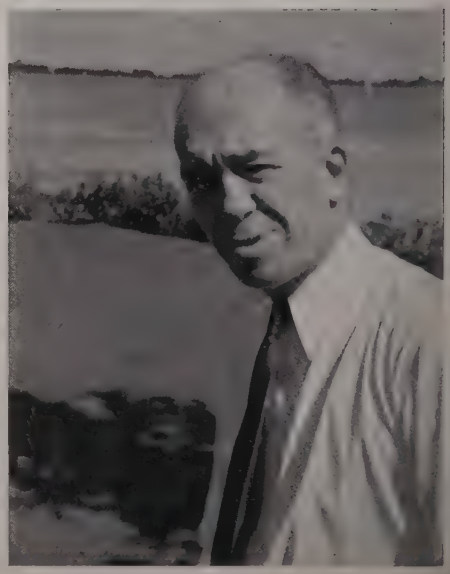
You may not, at first glance, recognize the gentleman here portrayed, for the drawing was made at Barbizon in the spring of 1893 by the late Evarts Tracy. The subject was, and still is, no other than a past-president of the A. I. A. and the first president of the Construction League of the United States—Robert D. Kohn

Your guess as to what Arthur Loomis Harmon is doing here, and why, is certainly as good as ours. He may be scrutinizing the top of an imaginary building higher than his firm's Empire State Building—or he may be merely —well, it's your guess

Usually, according to our own observations, associates in an architectural office are likely to separate as widely as possible when they go out to play. Yet here we have two of them out on a canoe trip in the Canadian wilds, and apparently enjoying one another's company—H. R. Dowswell and Richmond H. Shreve

Architects and Avocations

The digressionist activities of Elisabeth Coit, A. I. A., are somewhat varied, including wood chopping, water-color sketching, and carpentry, but her friends seem to derive most amusement from her playing of the ocarina



We are told that D. Allen Wright, of Detroit, wields a mean helm in small-boat sailing, when he escapes his clients, but he insists that architecture is one of his hobbies, even though it occupies much of his time and affords him a living

Selected again at Atlantic City

Last year, in "The LITTLE HOME" which drew many thousands of visitors to the Steel Pier, Atlantic City, a FITZGIBBON'S "OIL-EIGHTY" STEEL BOILER was installed as the source of heat—and hot water supply.

This year the architect, Wm. F. B. Koelle, Philadelphia repeats—and selects the

FITZGIBBONS
BOILER-AIR CONDITIONER
for
"The Home of 1936"

ANY OIL BURNER, GAS BURNER, or STOKER is at home behind the rear panel of this unit.

Right up to the minute in every particular, "The Home of 1936" is of course "Split-System" air-conditioned and heated. Certain of its rooms such as kitchen, bath, and garage are supplied with radiator heat, while the remainder are provided with conditioned air—tempered, humidified, cleaned and circulated. The selection of a Fitzgibbons unit for this service is most significant.

But heat and conditioned air were not the only factors governing the selection of this unit. The simplicity of HOT WATER SUPPLY from the unit itself, with NO STORAGE TANK required, aided greatly in the decision—just as it has in thousands of homes where Fitzgibbons Boilers or Boiler-Air Conditioners are giving dependable and economical service.

• •

LEARN WHY the Fitzgibbons Boiler-Air Conditioner was selected for "The Home of 1936." . . . . Write us for Bulletin AM on "Split-System" air conditioning.

Fitzgibbons Boiler Company, Inc.

GENERAL OFFICES: ARCHITECTS BLDG., 101 PARK AVE., NEW YORK, N. Y.

Works: OSWEGO, N. Y.

BRANCHES AND REPRESENTATIVES IN PRINCIPAL CITIES

50 YEARS STEEL HEATING BOILERS

American Architect and Architecture, published monthly by Hearst Magazines Inc., 572 Madison Avenue, New York, N. Y. $3.00 per year; Canada, $4.00; Foreign, $5.00. Entered as second class matter April 5th, 1926, at the Post Office at New York, N. Y., under the act of March 3rd, 1879. Issue 2651, dated November, 1936

WROUGHT IRON
for PIPING and TANKS
based on "CORROSION STUDY"

Example by . . . I. R. TIMLIN . . . St. Louis Architect

● Wrought iron is widely used in the country's fine buildings because leading architects and engineers have been convinced of its durability through a study of service records.

A study of corrosive conditions to be encountered, and the record of various metals under those conditions, calls for wrought iron in hot and cold water tanks, smokestacks and boiler breechings, refrigeration and other corrosive piping services.

Illustrated is the Southwestern Bell Telephone Company Building at San Antonio. An analysis of the corrosive conditions showed that wrought iron should be specified for the surge and house tanks, also for the cold water lines, waste and drain lines, rain water leaders, standpipes and fire lines.

Where you are planning on mechanical equipment, let us aid you in analyzing the probable corrosive conditions. With these facts, together with records of the building profession's experience covering half a century, you'll be able to "prescribe" wrought iron for those corrosive services where it will give longer and more economical service.

Send your requests for assistance in making a "corrosion study of local conditions" to our nearest Division Office or our Engineering Service Department in Pittsburgh. A. M. Byers Company, Established 1864. Pittsburgh, Boston, New York, Philadelphia, Washington, Chicago, St. Louis, Houston.

BYERS
GENUINE WROUGHT IRON PRODUCTS

Specify Byers Genuine Wrought Iron Pipe for corrosive services and Byers Steel Pipe for your other requirements.

PIPE · WELDING FITTINGS · SPECIAL BENDING PIPE
PLATES · SHEETS · O. D. TUBES · FORGING BILLETS
STRUCTURALS · BAR IRON · RIVETS · CULVERTS

AMERICAN ARCHITECT and ARCHITECTURE

CONTENTS
NOVEMBER, 1936

COVER. Rendering of the proposed New York 1939 World's Fair by John Winerich

TRENDS. . . . News . . . Events . . . Facts . . . Faces . . . Ideas . . .Opinions . . . Comments . . . presented in a classified and logical sequence — 4

FRONTISPIECE. Views of the pool at Astoria, Long Island, N. Y. — 20

MUNICIPAL RECREATION. A description of the method whereby New York's recreational centers including parks, playgrounds, swimming pools and parkways were built and financed. This article was written by Robert Moses, Park Commissioner of New York. This is the first article Mr. Moses has written for an architectural magazine on this subject and it is well worth reading, since he has been called the "Greatest Architect in New York" — 21

MUNICIPAL RECREATION. Plans and pictures of memorial and marginal playgrounds; the Thomas Jefferson Pool in Manhattan; the Astoria Park Pool, Astoria, Long Island, New York; and the Tompkinsville Pool, Staten Island, New York — 23

SWIMMING POOL CONSTRUCTION by W. H. Latham, Park Engineer, is an authoritative study of the problems and their solution in the construction of municipal swimming pools — 33

TOLEDO. A pictorial section of one of the oldest and most beautiful cities in Spain which has recently suffered the effects of the Spanish Civil War — 35

EDITORIAL. A proposal whereby the bank and its client can safeguard their real estate interests with intelligent architectural co-operation — 43

THE NEW YORK 1939 WORLD'S FAIR. The theme and the men behind the Fair are described in a well illustrated article — 44

DENTAL OFFICE, MELROSE, MASSACHUSETTS. A specialized work of unusual merit recently designed by Royal Barry Wills in association with Hugh A. Stubbins — 49

THE DIARY. A day by day account of important architectural happenings of the month by Henry H. Saylor — 53

TWO APARTMENTS IN MIAMI BEACH, FLORIDA by L. Murray Dixon. The Ocean Front Apartments and the Pinecrest Apartments despite their design for a semi-tropical section of the country have an unusual plan application to small apartment house design — 55

MODERN PLANS WITHOUT PICTURES by Raymond Baxter Eaton is a continuation of a previous plan analysis which appeared in the May, 1936, issue. 49 plans are thoroughly analyzed — 58

ARCHITECTS AND AVOCATIONS. Informal pictures of architects at play — 66

MEMORIAL TABLETS is the subject for the 121st continuous feature of minor architectural details. This begins the 11th year of this valuable contribution — 67

WORKS AND DAYS is Part I of five articles of a reminiscent nature by Claude Bragdon. Upon completion in American Architect and Architecture, these articles will appear in book form — 79

INSULATION—WHAT WE KNOW AND OUGHT TO KNOW ABOUT IT. A technical article by Tyler Stewart Rogers gives many constructive, pertinent facts about important construction techniques — 83

NEW DATA ON ENTRANCE DOOR INFILTRATION WITH AIR CONDITIONING by Arthur M. Simpson is a survey analyzing infiltration through various types of doorways — 85

TIME SAVER STANDARDS. . . . Heat transmission and infiltration through doors, windows and glass masonry. . . . How to find heat transmission of building sections. . . . Heat transmission through building sections with per cent of heat transfer stopped by insulation — 89

TECHNIQUES. . . . Methods . . .Materials . . . Research . . . Practices — 96

BOOKS . . . . . — 114

ENNETH KINGSLEY STOWELL, A.I.A.
Editor

HENRY H. SAYLOR, A.I.A.
Associate Editor

WALTER SANDERS
Associate Editor

CARL MAAS
Managing Editor

ROGER WADE SHERMAN
Technical Editor

TYLER STEWART ROGERS
Director of Technical Service

R. F. GARDNER
General Manager

T. W. TOWLER
Advertising Manager

JAMES A. RICE
Western Manager

ol. CXLIX No. 2651

MERICAN ARCHITECT (Trade-Mark g. U. S. Patent Office), with which is combed ARCHITECTURE (Reg. U. S. Patent fice). Published monthly by Hearst Magaes, Inc., 572 Madison Avenue, New rk. Other Offices: 919 N. Michigan Ave., Chicago; General Motors Bldg., Detroit; 2 Newbury Street, Boston. William Randolph Hearst, President; Richard E. Berlin, ecutive Vice President; John Randolph earst, Vice President; Earle H. McHugh, ce President; R. F. Gardner, Vice Presint; T. W. Towler, Vice President; W. R. ters, Treasurer; Arthur S. Moore, Secrey. Copyright, 1936, by Hearst Magazines, c. Single copies, $1.00. Subscription: ited States and Possessions, $3.00 per ar; Canada, $4.00; Foreign, $5.00. Enred as second class matter, April 5, 1926, Post Office, New York, under Act of rch 3, 1879. American Architect and chitecture is protected by copyright and thing that appears in it may be reproduced either wholly or in part without special permission.

PHOTO: ACME

PHOTO: WIDE WORLD

Biggest story of the month in architecture was the publicity release of plans for New York's 1939 Fair (page 44). Naturally, impeccably groomed, boutonniered, Fair President Grover A. Whalen was pretty much the center of things. (Above) Mr. Whalen shyly points out the features of the model of the Exposition to amused members of the Board. (Below) Affixing his signature to the contract to start actual construction on the project. Seated at Mr. Whalen's right is Harvey Stevenson. Standing from left to right, Gerald Holmes, Richard Kimbell, Colonel John P. Hogan, Edgar Williams, Richmond Shreve, Earle Andrew, Charles C. Green, Stephen Voorhees, Commodore Howard A. Flanigan

AIA Blast

"In the name of the profession of architecture in the State of New York, we, its undersigned representatives, wish to register a most emphatic protest against the employment of the State Architectural Bureau in the Department of Public Works to design the New York State War Memorial Building."

Denied a conference with Governor Herbert H. Lehman, it is small wonder that the New York City Chapter of the A. I. A., along with affiliated chapters throughout the state, chose to begin its letter of protest so brusquely. Branding Governor Lehman's attitude as "Bureaucratic domination of the arts," challenging the "moral right" of the Department to ignore the best professional talent of the State in designing and erecting a great public monument, the letter continues:

"While you have appointed an Authority to handle all phases of this Memorial, we believe we are justified in assuming that the present disposition of this project meets with your approval. It was with a keen sense of disappointment, bordering on incredulity, that we received in response to our request to you for a conference on this subject a curt reply from one of your office staff referring us to Mr. Scheiberling, and an equally curt reply from Mr. Scheiberling stating that the Commission had by resolution on July 13 accepted the 'offer' of the Department of Public Works to design the structure.

"We had entire confidence that you, whom we know to be a gentleman of culture and broad understanding in addition to your abilities as leader and administrator, would not be unmindful of your responsibility to see that this great monument, paid for by public subscription and dedicated by the people of the State to such a high purpose, should represent the best efforts of the greatest creative artists of our community.

"We have a deep respect for the personnel and achievements of your Department of Public Works. Many of us have had the opportunity of working with it and are familiar with its value and also have some idea of its proper limitations.

"This situation called so obviously for the selection of the best possible talent among architects, painters and sculptors by competition or otherwise—the winners to design the memorial, in association perhaps with the Department—that this latest triumph of bureaucratic domination of the arts is viewed with deep concern by many elements of the community.

"It has been known for some time that it is the policy of the Department of Public Works to oppose the services of private architects and engineers on public work connected with the State. Our experience seems to justify our stating that the rulings of this Department have been actuated by a resentful, even an arbitrary and unenlightened attitude.

"We submit to you that this Department as the servant of the public has no moral right to ignore the entire profession of architecture in this State. This applies especially to this particular building, the funds for which are being obtained by public subscription.

"We therefore urge that you shall give this matter further serious consideration and that the architects of the State shall be heard."

The letter is signed by the following: Hobart B. Upjohn, president of the New York Chapter of the American Institute of Architects; Stephen W. Dodge, president of the Brooklyn chapter; Robert D. Kohn, president of the council of Registered Architects; R. H. Shreve, director of the New York Division of the Institute; Leon N. Gillette, president of the Society of Beaux

(*Continued on page* 8)

WELDING
is the Accepted Method for Joining Pipe

The Rockefeller Center Building in New York, the Chicago Civic Opera House, and the Terminal Tower in Cleveland, are typical of the many important buildings in which welding has been used to join the piping. More and more are modern piping installations being made by oxy-acetylene welding.

Welding makes piping systems integral—without joints. The welded system is therefore *leakproof for the life of the pipe.* Designs and specifications are simplified, and many restrictions inherent in other methods of installation are removed. The welds when properly made have the full strength of the pipe, take up less space than any other type of joint, look neater, save on insulation, and involve no additional cost or time in erection.

Linde engineers have cooperated in the design and installation of many millions of feet of building, and power piping and over 20,000 miles of overland pipelines. They have prepared technical data especially for those interested in designing and specifying "Piping Joined by Oxy-Acetylene Welding." Ask the Linde office in your city for complete details. The Linde Air Products Company, Unit of Union Carbide and Carbon Corporation, New York and principal cities.

Everything for Oxy-Acetylene Welding and Cutting

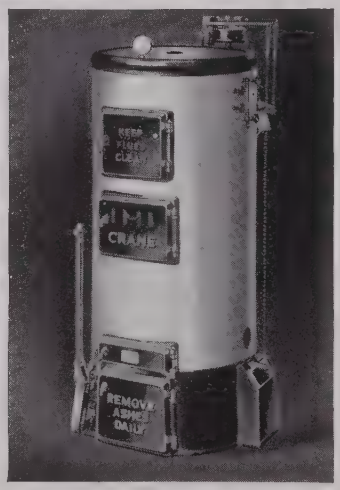
LINDE OXYGEN • PREST-O-LITE ACETYLENE • OXWELD APPARATUS AND SUPPLIES FROM PRODUCTS OF UNITS OF UCC UNION CARBIDE AND CARBON CORPORATION LINDE UNION CARBIDE

HOW TO CAPITALIZE ON

Crane Heating Economy

★ ★ ★ ★ ★ ★ ★ ★

Humidifying Radiator. Large evaporating capacity in small space. Cabinet enclosure. Easily, quickly installed, replacing ordinary radiation. Practically no operating cost.



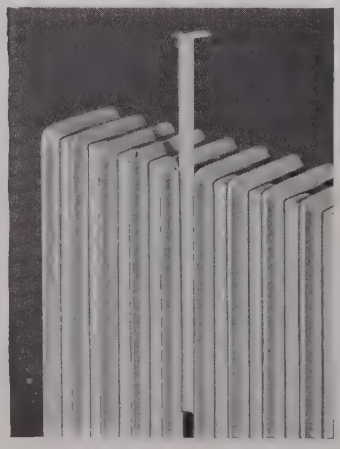
S O & W O Sectional Boiler for automatic firing. The S O & W O has super-efficient extended ceiling surface. For oil burner or stoker.

•

Crane Round Boiler for Coal Burning—the boiler with 24 radical improvements which result in substantial economies and great ease of tending. Readily adapted to oil burning.

•

Directed Radiation. Invisible shields direct heat outwardly into room, minimizing ceiling-floor temperature difference, protecting walls, etc., from smudge.



● One test of the value of architectural service is reduced residential "*operating cost*" effected by scientific selection of equipment. A gem of architectural design is of little value if it costs too much to "operate."

When you specify a Crane Heating System—straight radiation or with auxiliary air conditioning—you are capitalizing, in the value of the home, an operating economy born of modern engineering and the latest researches in residential heating. You match the perfection of your architecture with perfection in its operating equipment.

Crane boilers have 50 per cent more horizontal "ceiling" heating surface over the hot gases than ordinary boilers. Patented baffles direct the water to the most efficient heating areas. This saves heating dollars in amounts *big enough to count!*

Crane Heating Systems include boilers for coal (hand or stoker-fired), oil or gas, for the operation of steam, hot water, vapor or vacuum systems, with or without air conditioning. You have your choice of Directed or Concealed Radiation plus the Crane Humidifying Radiator.

• • •

Consult your Sweets, or the nearest Crane Branch

CRANE

CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVE., CHICAGO, ILLINOIS • NEW YORK: 23 W. 44TH ST.

Branches and Sales Offices in One Hundred and Sixty Cities

VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

Something About Some Brick Truths That Were Accused Of Being Lies

[Furthermore I Was Accused Of Telling Them]

SEEMS like it's about time to tell some more brick truths, much as I may hate to do it. My idea of truth is, a something that is an *is*, and no amendments. So when I get to ranting about Old Virginia Brick, it tain't at all about just any old brick made in old Virginia. There's a whale of a difference.

Am not denying there's a considerable passel of such latter bricks made and sold down here, that we don't have a hand in. Yes, and some of them are Jefferson size at that. But adding a half-inch or so to the top of a brick doesn't make it a true Jefferson, nohow.

Nor can making them out of a mud-clay having a dingy clouded color—as mud-clay has a way of having — give them the *born-old* look and depth of color that our True Jeffersons so unfailingly have. If you really want such "dingies" there's no use at-all of our talking.

But if you want deep rich clear colorings, a certain amount of off-shapeness and just enough softening of the edges to make them full brothers to those Mr. Jefferson made and used building Monticello, (and a right smart number of other notable Virginia structures), then reckon you might induce us to part with some of ours.

You can have 'em either mould-made or hand-made at that. There's very little difference in the cost in any event.

MONTICELLO—EAST FRONT

'Tother day a "smart Alecky" contractor made a crack at me about it being "a lot of hooey about our using three different kinds of coal in burning our brick to get the colors and age-old effect."

So I straight-away invited him to pay us a visit for 30 days, which is the time it takes to make our true Old Virginians. He could then see for himself how they are neither a clay nor a shale brick, but just the right painstaking mixture of both. He could also see what a powerful lot the particular kind of sand we use in the mould, has to do with their making. So far as we have been able to learn, no place else in Virginia is this sand found.

No, he didn't come. But he did send along a passable order for the Jeffersons and a lot of special shapes, which last although we can't make a cent on them, we are always glad to be accommodating about.

A while back we made 70 thousand of them for a Government job, and not a single reject. Which near as have been able to figure out, comes close to being around 100 percent satisfactory.

But even so, even if the most part of what have been saying tallies fairish with the truth, you might feel I'm doing a considerable tooting of our nice shiny tin horn. Maybe so. But long as we must sell a few brick now and again, there doesn't seem to be any cause for tucking them under a bushel and expecting much light to leak out.

HENRY GARDEN
Brick Maker for
OLD VIRGINIA BRICK CO.
with Mr. Jefferson as a Guide.

P.S.
You are right. Did make a near promise to chat with you this time about Holland brick. But that can wait. Suspect you ain't so alfired het-up about them anyway.

OLD VIRGINIA BRICK

Old Virginia Brick Company
Salem, Virginia

COURTESY: GERMAN RAILWAYS

In the rumble of the future war the obbligato of whirling airplane propellers will be an earpiercing one. New airports are an important part of the general theme. One of the most recently build and one of the finest is in Frankfort, Germany

Arts Architects; Charles A. Dewey, president of the Westchester Society of Architects; James Whitford, president of the Staten Island Society of Architects; Clarence H. Gardinier, president of the Albany Chapter of the Institute; John J. Wade, president of the Buffalo Chapter; Conway L. Todd, president of the Central New York Chapter; Walter M. Nugent, president of the Rochester Society of Architects.

Letters supporting the protest were also sent to Governor Lehman by Electus D. Litchfield, president of the Municipal Arts Society, and Thomas S. Holden, president of the New York Building Congress.

Housing and Public Health

According to Professor C. E. A. Winslow, the director of the school of Public Health at Yale University, there are 6,000,000 families in this country that must be housed by the government because their incomes are so low that they are unable to purchase decent housing. Furthermore, Professor Winslow believes that the housing of these people is at a level lower than that which prevails in the leading countries of Europe. These two basic facts were pointed out last month in a radio address during which Professor Winslow called the idea that housing should be left to private enterprise "a romantic dream."

Said he, "Overcrowded conditions of living promote immorality. An unattractive home drives children into the streets and increases juvenile delinquency. Neither physical nor mental health nor fullness of living is possible where a whole family is crowded into a single room of a city tenement or struggles for existence in an insanitary shack on an Appalachian mountainside. The reason why we have so far failed to meet this situation is that, obsessed by the romantic dreams of rugged individualism, we have held to the view that the housing problem could be solved by private commercial enterprise. The brute fact is that in the United States, as in all the countries of western Europe, there is a considerable section of the population which has an income too low to permit housing of a minimum standard of health and decency. This is the very unpleasant conclusion we must face and, once we face it, there are only three alternative solutions of the problem. Either the lower economic group of our fellow citizens must continue to be housed like cattle (far worse than the cattle on a model dairy farm), or the economic structure of society must be changed to provide a living wage for all, or the government must subsidize housing for the lower income groups. The magnitude of the problem is beyond the possibilities of private enterprise; its importance is above any considerations of partisan politics."

As evidence of the soundness of h case, Professor Winslow points to th fact that English authorities estimate 1 per cent of their population has an in come too low to permit the payment c an economic rent. Even in the boo days of 1929, the Brookings Institute study on "American Capacity to Co sume" estimated that more than 2,000 000 families, nearly 8 per cent of th total, had annual incomes of less tha $500; nearly 4,000,000 families, almo 14 per cent of the total, had income between $500 and $1,000, and nearl 6,000,000 families, 21 per cent of th total, had incomes between $1,000 an $1,500. Today even the most conserva tive appraisers believe that 30 per ce of all families in the United States ar unable to pay an economic rent.

"It is abundantly clear," said Profe sor Winslow, "that the families belo the $1,000 income level cannot pay eve 6 per cent on the capital investment in volved in home construction. If min mum standards of health and decenc are to be secured, 4,000,000 familie must be housed by government aid wit an interest return of 3 or 4 per cent, an 2,000,000 families must be provided fo with practically no return at all."

Professor Winslow is in absolut sympathy with the present administra tion's attempt to establish a nationa housing program. He feels, howeve that these efforts have no more tha "scratched the surface of the problem. To meet the need of 6,000,000 low-cos dwelling units in twelve years would ca for half a million government-subsidize homes a year, Professor Winslow point out. Figuring cost of homes at a meagr $4,000, this would call for at least tw billions of dollars a year.

Capital Investment in Labor

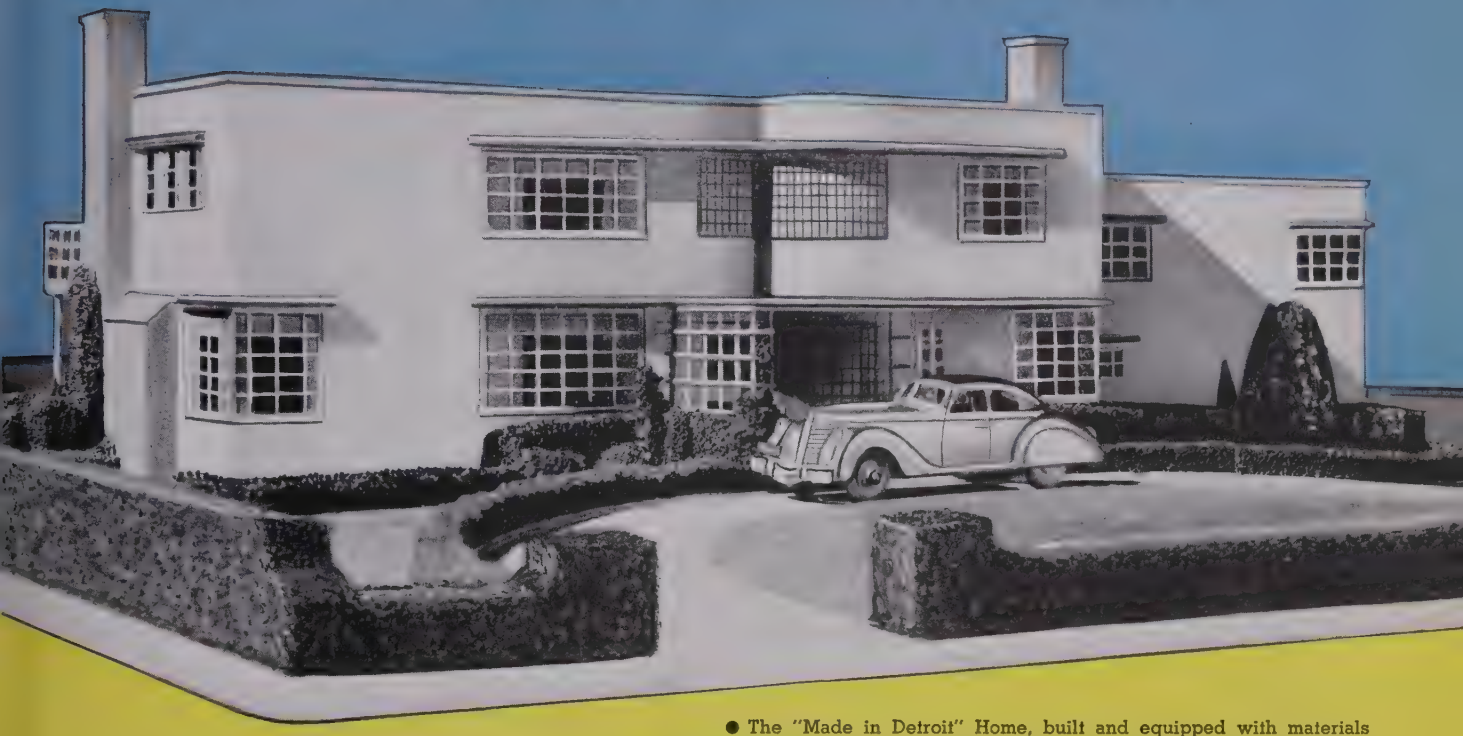
When organized labor talks glibly o the possibilities of a redistribution o wealth, and offers such pat phrases a "wealth serves only the rich," there i bound to be an answering volley fron the forces of capital. And such a re buttal, complete in its statistical analysis was published in a recent issue of *News & Opinion*, official organ of the Build ing Trades Employers' Association.

Using the construction industry as a example, *News & Opinion* says: "In n other field does the man with money play such an important part, nor in any other are such tremendously high capital investments constantly necessary t provide a day's work for mechanics. Examination of the cost of building

(*Continued on page* 12)

Briggs Beautyware

in keeping with the TEMPO of Modern architecture



● The "Made in Detroit" Home, built and equipped with materials made in Detroit and sponsored by the Detroit Board of Commerce. Hugh T. Keyes, architect, Detroit. Owners, Mr. and Mrs. Lloyd H. Buhs. An outstanding example of modern architecture, equipped throughout with Beautyware plumbing fixtures.

RECENT national surveys show that the preference for modern architecture by new home owners has gone rom 4th to 3d place during the past year. More and more omes are being built for living—from the inside out. And riggs Beautyware plumbing fixtures keep step with this wing to functional design in modern living.

very detail of Briggs Beautyware aids the architect in his resent-day problems of using space to the best advantage of using a wider range of materials for design, style and ecorative effect.

recision in manufacture permits greater accuracy in installation of units. Due to its design, a 5-foot Beautyware tub as as much bathing area as the ordinary 5½-foot tub. This s important. Every Beautyware tub has a patented lip ange for perfect joining with the wall material. eautyware's lighter weight makes special wall or floor supports unnecessary and cuts down installation costs. And the embossed serpentine bottom of the Beautyware safety tub is a great advance in home safety.

All Briggs Beautyware lavatories have removable overflow and waste valves. Briggs units are surfaced all over with porcelain enamel—including the under sides. These features give exclusive sanitary protection. And the porcelain surface of Beautyware, acid resisting at no extra cost, has a higher lustre—easier to clean.

Beautyware in gleaming white, in soft, rich, solid tones or exclusive two-tone combinations complements floors and walls in whatever decorative scheme you create.

Functional efficiency and compelling beauty, utility and charm are merged in Briggs Beautyware—modern plumbing fixtures for modern homes. Investigate Briggs Beautyware for bathroom, kitchen and service room!

BB

RIGGS MANUFACTURING COMPANY
New York: 101 Park Avenue

PLUMBING WARE DIVISION • DETROIT
Chicago: 177 N. Mich. Blvd.

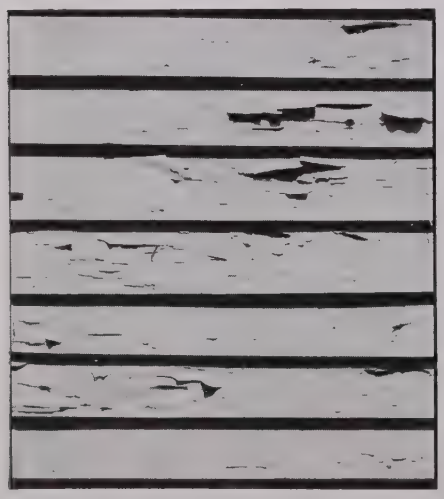
©1936

Camera shows why

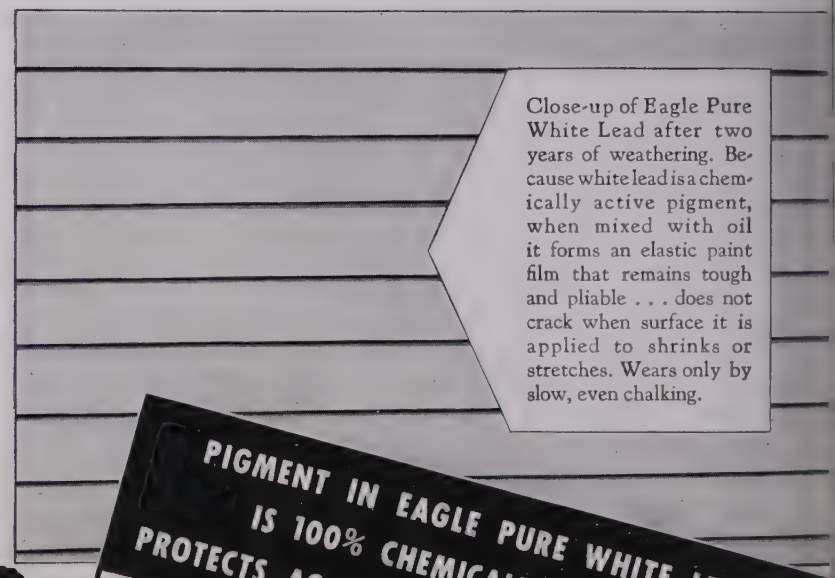
EAGLE pure WHITE LEAD

gives better paint protection

Substitute pigments in this paint created a brittle film . . . cause of most premature cracking, scaling or excessive chalking.

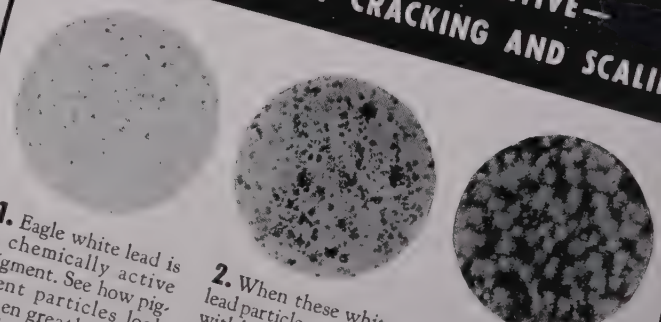


Close-up of Eagle Pure White Lead after two years of weathering. Because white lead is a chemically active pigment, when mixed with oil it forms an elastic paint film that remains tough and pliable . . . does not crack when surface it is applied to shrinks or stretches. Wears only by slow, even chalking.



Choice of good painters since 1843.
Sold by paint dealers everywhere.

PIGMENT IN EAGLE PURE WHITE LEAD IS 100% CHEMICALLY ACTIVE— PROTECTS AGAINST CRACKING AND SCALING



1. Eagle white lead is a chemically active pigment. See how pigment particles look when greatly magnified. (Note uneven, irregular shape of particles—one reason for white lead film wearing so long.)

2. When these white lead particles are mixed with linseed oil, a chemical reaction begins. Particles "bloom out," making an interlocking mass of pigment and linseed oil. (Inert paint pigments do not bloom out.)

3. The union of white lead and oil forms a paint that seeps into the surface it is applied to . . . sticks on like glue. Stays tough and pliable . . . does not crack when surface stretches or shrinks.

THE EAGLE-PICHER LEAD COMPANY · CINCINNATI

What telephone arrangements will you plan for the Webers

PROBLEM No. 4

if they build this house?

FRED WEBER is "on the way up" in the printing business. He's going to build his home now —so the whole family can enjoy it while the children are growing. The plans on this page have been tentatively approved. *What provisions will you make for telephones?*

First of all, built-in conduit or pipe to avoid exposed wiring and protect against certain types of service interruption. Also, the Webers may want to add more telephones later on. Conduit, leading to outlets at strategic points, makes further telephone installation easy . . . even with the permanent, modern building materials you specify today.

An outlet belongs in the master's bedroom. When the girls grow up they'll want a telephone for their own use, so conduit should lead to the room they'll occupy. Three outlets will be enough for the rambling first floor. One in the living-room. One in the hall closet, easily accessible from the dining-room and library. And one in the kitchen to serve the rear of the house.

This is a suggested approach to a typical problem. Our engineers will help you develop efficient, economical conduit layouts at any time. No charge. Call your local telephone office and ask for "Architects' and Builders' Service."

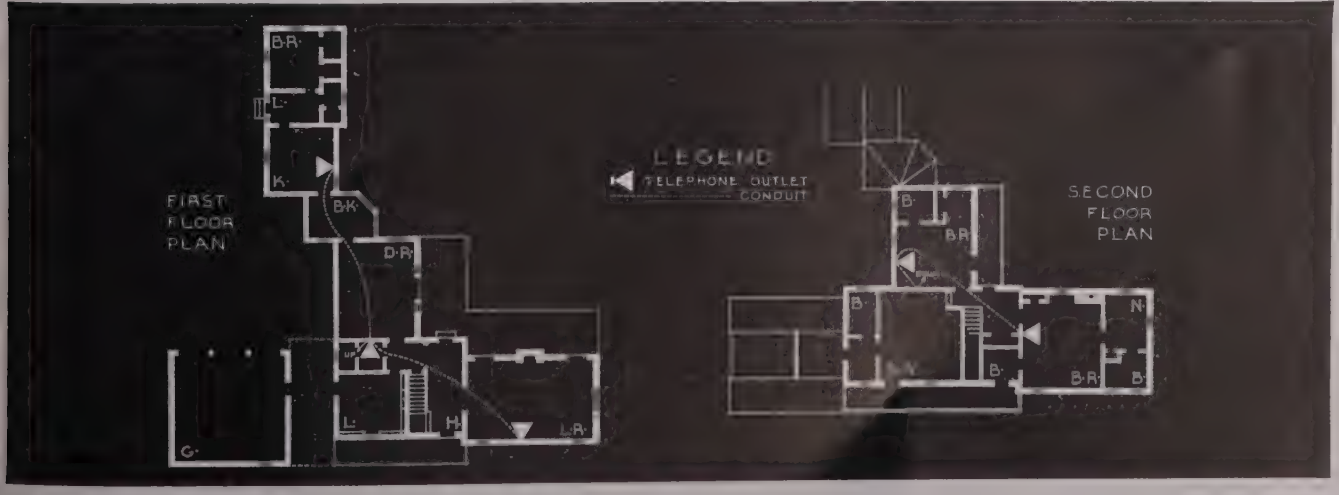


PHOTO: WIDE WORLD

With "correct thinking clinics" and Dr. Kanichi Tanaka's discovery that Japanese have as strong hand grips as Americans, Japan's interest in education is growing apace. Moppets engage in developing the honorable grip on the playground of their new international style primary school in Tokyo

projects and the man hours of labor involved, shows without question how dependent labor in this field is upon capital investment. Recently the Ford Motor Company gave $9007 as its cost of setting up a job for a Ford employe. The Goodyear Tire & Rubber Co. showed $4811 as its capital investment. The sums needed for each building trades worker are much greater, because the capital investment must be raised time and time again."

As illustrative proof of these assertions, *News & Opinion* analyzes the capital investment by trades on the Knickerbocker Village apartment development in New York City. The pay roll accounts totalled 1,759,640 man-hours of employment at the site. The daily wage per man, including all workmen, ranged from $5 to $14, averaging about $9.50. *News & Opinion* makes the following tabulation showing the capital investment required for a day's work for one man in specified trades:

Glazier	$17,150
Roofer & Sht. Met. Wkr.	7,425
Painter	1,146
Electrician	1,046
Plumber	790
Lathing & Plstrng Wrkrs	402
Cement & Con. Wrkrs	312
Masons	182

Taking into consideration the amount spent for direct payments in wages, the costs of materials, and the investment necessary for the land costs, *News & Opinion* feels justified in concluding that: "We believe sufficient examples have been given to indicate that building trades labor is entirely dependent upon capital investment for its livelihood and that whenever building trades workers adopt policies that tend to prevent the accumulation of capital or its active flow in building erection as office buildings, factories or houses, they are hurting their own chance of employment."

Purdue's "Number Four"

It was just about a year ago that Purdue University set aside 120 acres in Lafayette, Indiana for the purpose of practical experiment in the hope of learning something about construction and cost in the small house field. All in all, five houses have been erected on the "laboratory campus," one of the most interesting being a steel dwelling that cost $4,992—$8 less than the originally established top price.

This new house, officially designated as "number four," took seventy-five days to construct, has three bedrooms, a living room, dining alcove, kitchen, bath and garage, was financed by the Purdue Research Foundation, and was built on land donated by the University trustees.

Says the bulletin issued by the University: "Steel used in home construction has been generally in the direction of replacing the structural members, such as wooden wall studs and floor joists, with rolled or pressed structural steel shapes, but house No. 4 goes beyond this point. The construction methods used have produced what is practically an all-steel dwelling. The walls and roof were largely prefabricated in the shop ready for erection at the site."

Principal objective of the plan arrangement has been to avoid the box-like appearance frequently criticized in flat-roofed houses that attempt extreme simplicity. Here, mainly by increasing the height of the living room area, the "shoe-box" effect has been eliminated. Three features of the plan, pointed out as noteworthy, are the compact hall which prevents waste space; the small space required for heating equipment, and the use of the garage for laundry.

Quoting the bulletin: "Hall space is limited to a small passage which provides access to the bathroom and bedrooms from the living room. Since the wall space of this passage is practically all doors, it is difficult to conceive of a hall to serve four rooms being smaller."

Further, "few small houses, in which space must be conserved, as an aid to cost reductions, make use of the garage for laundry purposes. In House No. 4 the arrangement of the kitchen entrance provides additional room in the garage to allow for laundry trays in this area without crowding."

(*Continued on page* 16)

PHOTO: UNDERWOOD & UNDERWOOD

Strange indeed are the things that often happen to a western style of architecture when adapted to oriental needs. This sort of baroque garden gate is the facade of the Ministry of Navy Building in Nanking, the new capital of China

For the NEW Architectural Trend

USE THIS NEW RESOURCE

THE REVERE REVECON System is a tremendous aid to architects in expressing the new functional architecture desired today—a means of making savings in construction—a product and a system that fits into nine out of ten interior or exterior modernization jobs right now!

REVECON structural sections solve completely one of the most vexing problems of the architect—a better method of constructing surfaces using standard flat sheet materials. REVECON construction enables the job to be done easier, faster, more economically. It provides for ready replacement or rearrangement of panels. It gives full protection against distortion by expansion or contraction.

How this is done cannot be told properly in an advertisement. It is better shown in the data sheets here reproduced. Sixteen of these sheets, with specifications, are now ready for distribution to responsible architects and contractors. Ask for the new Revere "REVECON HANDBOOK." Write us on your own letterhead for your copy.

REVERE REVECON SYSTEM of standard extruded structural sections for holding decorative flat sheet materials.

Revere Copper *and* Brass

INCORPORATED

FOUNDED BY PAUL REVERE
1801

EXECUTIVE OFFICES: 230 PARK AVENUE, NEW YORK CITY · MILLS: BALTIMORE, MD. · TAUNTON, MASS. NEW BEDFORD, MASS. · ROME, N. Y. · DETROIT, MICH. · CHICAGO, ILL. · SALES OFFICES IN PRINCIPAL CITIES

Design from the "Portfolio of Zouri Store Fronts."

SUGGESTIONS ON THE USE OF ZOURI MEMBERS IN THE MODERN STORE FRONT—

Yours for the asking!

The new PORTFOLIO OF ZOURI STORE FRONTS has been prepared to help you visualize some of the interesting design possibilities that lie in the use of rustless metal Zouri Store Front members. A copy is available for your files on request.

COMPLETE, UP-TO-DATE LINE

The complete, and harmoniously designed, Zouri Store Front line of modern, rustless metal members is furnished in both rolled and extruded construction. It includes standard members such as sash; bars; hood, recessed, and concealed awning bars; transom bars; grilles; thresholds; ventilators; show case doors; and a wide variety of mouldings and shapes for jambs, sills, door jambs, pilasters, and other structural and decorative functions. A variety of useful new snap-on mouldings, and mouldings for use with structural glass are available. Entrance doors, metal signs, bulkheads, ornaments, and special mouldings are furnished to architect's details.

For further information see catalog in Sweet's, call the Zouri distributor, or write the factory.

ZOURI STORE FRONTS
NILES, MICHIGAN

Send copy of the new Portfolio of Zouri Store Fronts.

NAME _____ AA-11

ADDRESS _____

ZOURI STORE FRONTS
NILES · MICHIGAN

ARCHITECTURALLY SPEAKING

by

OTIS ELEVATOR COMPANY

RECENTLY, we used this *Architecturally Speaking* page to announce the rounding out of what we consider the most modern phase of elevator development—a complete line of elevators whose control mechanism is operated by buttons—Finger-Tip Control. May we now direct your attention to an important feature in this announcement, namely, the adaptation of Signal Control (master of the Finger-Tip line) to moderate-speed machines.

You are already familiar with the use of Signal Control in the higher buildings. By adapting Signal Control to geared, moderate-speed car-switch machines, we have made it possible for the moderate-sized building to give big-building elevator convenience. Which puts the older building on a far more favorable basis with the new and towering giant.

Heretofore, these slow-speed elevators could not be modernized without the costly scrapping of a large part of the machinery. It is now not only possible, but practical, to change over the geared machines themselves. Takes only moderate additions to present equipment to make them Signal Control-operated.

Furthermore, automatic Signal Control is not only available for passenger elevators of the geared type, but for slow-speed freight elevators as well.

All of which opens new and unlimited modernization opportunities for these older buildings. No longer need the smaller building suffer in *quantity* or *quality* of transportation as compared with its big neighbor. For elevator modernization to Finger-Tip Control will make space in one just as desirable as in the other.

If you are interested in more complete details, we suggest that you request full information from the Otis office in your city.

From the chrysalis of Atlanta's most blighted slum area, consisting of dilapidated frame houses and shanties, emerges PWA's Techwood, first slum clearance project. The rents for these apartments start at $16.50 per month for three rooms

While the kitchen arrangement has been criticized on the grounds that doors at both ends of the long axis make it a busy thoroughfare, and that cupboards are inadequate to accommodate all utensils of cooking, the bulletin contends that this can be proved only after actual use.

The dining space is essentially a part of the living room, but is so placed that it affords privacy at meal times and also serves to increase the apparent size of the living room. This effect of spaciousness has been carried out by opening one end of the dining area to the living room, and by increasing the ceiling height of the living room 1 foot 9 inches above that of the other rooms where the height is eight feet. No cellar is included.

Closets are of average size and are arranged to present minimum space for greatest usefulness. Each closet is equipped with a shelf and clothes hanging rod. In addition to closet space for each bedroom there is a linen closet, and a coat closet near the door. No other storage spaces are provided. In all, the house contains 1,289 square feet and on this basis cost $3.90. The University has found that the overhead and profit to builder on this project was 4½ per cent, a total of $223.80.

Building Permits

After less than seasonal decline in August, the volume of building permits issued in September made a substantial gain in that month over both the preceding month and the same month of last year. According to figures compiled by Dun & Bradstreet, Inc., totals for 215 cities were $88,791,762 in September, 1936, compared with $83,109,944 in August, and $47,479,944 in September, 1935. The increase over last year amounted to 87 per cent.

For New York City alone permits issued had a total value of $17,331,441 as against $12,095,174 in August and $9,227,037 in September, 1935. This represented increases, respectively, of 43.3 and 87.8 per cent.

For the 214 cities outside of New York, permit values for September aggregated $71,460,321, a gain of 0.6 per cent over the $71,014,579 figure recorded for August this year, and a rise of 86.8 per cent as compared with the 1935 total of $38,252,907.

NAREB Convention

Just about this time of year, when the first cold breeze begins to snap at your pants legs and you take the mothballs out of your winter overcoat, most everyone realizes that it is a swell time to take a southern vacation. Taking this weakness of the flesh into consideration, smiling broadly at the upward swing in building, officials of the National Association of Real Estate Boards have little doubt that their 29th annual convention, to be held in New Orleans from November 16-21, will bring out a record breaking attendance.

One man sure to be on hand for the convention is Charles N. Chadbourn, member of the Minneapolis Real Estate Board. Just twenty years ago Mr. Chadbourn coined the term "Realtor" as a designation of NAREB membership. Mr. Chadbourn, known as the "Father Realtor," will be honored at the "old timers" dinner opening the convention.

After the executive sessions covering the first two days, meetings of the Association's specialized institutes, Divisions, and Councils will be staggered over a period of three days. Excerpts from the convention program follow:

American Institute of Real Estate Appraisers, November 18, P.M.;

Institute of Real Estate Management, November 19, A.M.;

National Mortgage Board, Thursday November 19, A.M.;

Brokers Division, November 18, P.M.;

Land Developers and Home Builders Division, November 18, P.M.;

Industrial Property Division, November 18, P.M.;

Institute of Farm Land Brokers and Managers, November 19, A.M.

CELOTEX ANNOUNCES

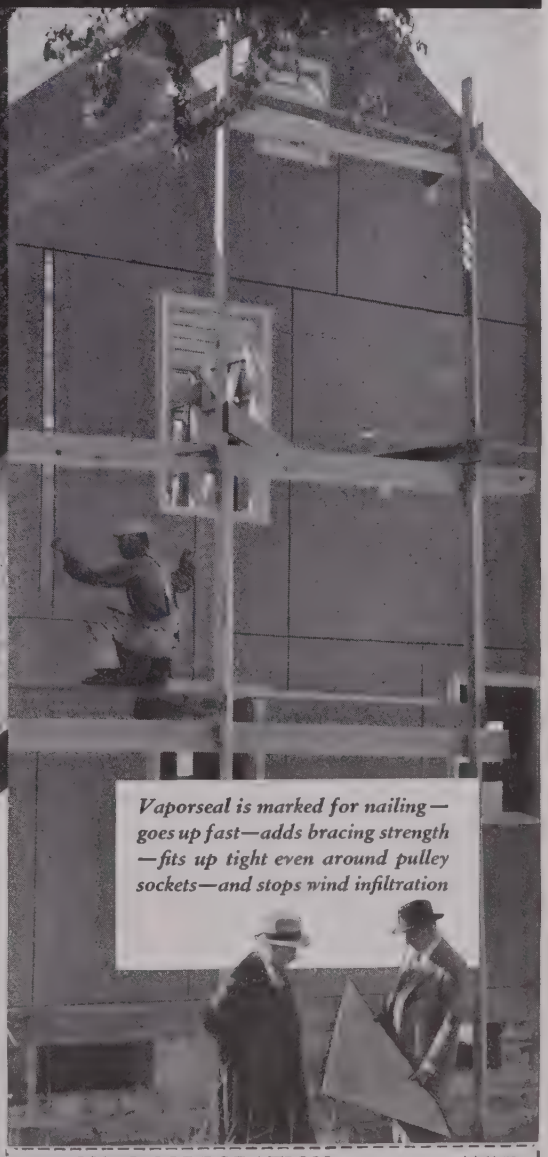
VAPORSEAL

INSULATING SHEATHING

Moistureproofed!...and Backed by Celotex Guarantee

Vaporseal is standard, time-proved Celotex sealed against moisture by a continuous surface coating of special asphalt on both sides and all edges

One side is additionally treated with a bright reflecting aluminum compound as a vapor seal. And because the seal is on the surface—not integral—full insulating value is maintained



Vaporseal is marked for nailing—goes up fast—adds bracing strength—fits up tight even around pulley sockets—and stops wind infiltration

HERE is genuine Celotex in new form, developed specially to solve the problem of moisture penetration and condensation.

The core is standard Celotex, waterproofed during manufacture, then sealed on the surface against vapor and water.

It is the same thickness as the wood sheathing it replaces—25/32″—and provides far greater bracing strength. Like all Celotex Cane Fibre Products, it is protected by the Ferox process against termites and dry rot—and covered by the Celotex Life-of-Building Guarantee.

May we send you a sample and full information without obligation?

THE CELOTEX CORPORATION • 919 NORTH MICHIGAN AVE., CHICAGO, ILLINOIS

CELOTEX

REG. U. S. PAT. OFF.

World's Largest Manufacturer of Structural Insulation

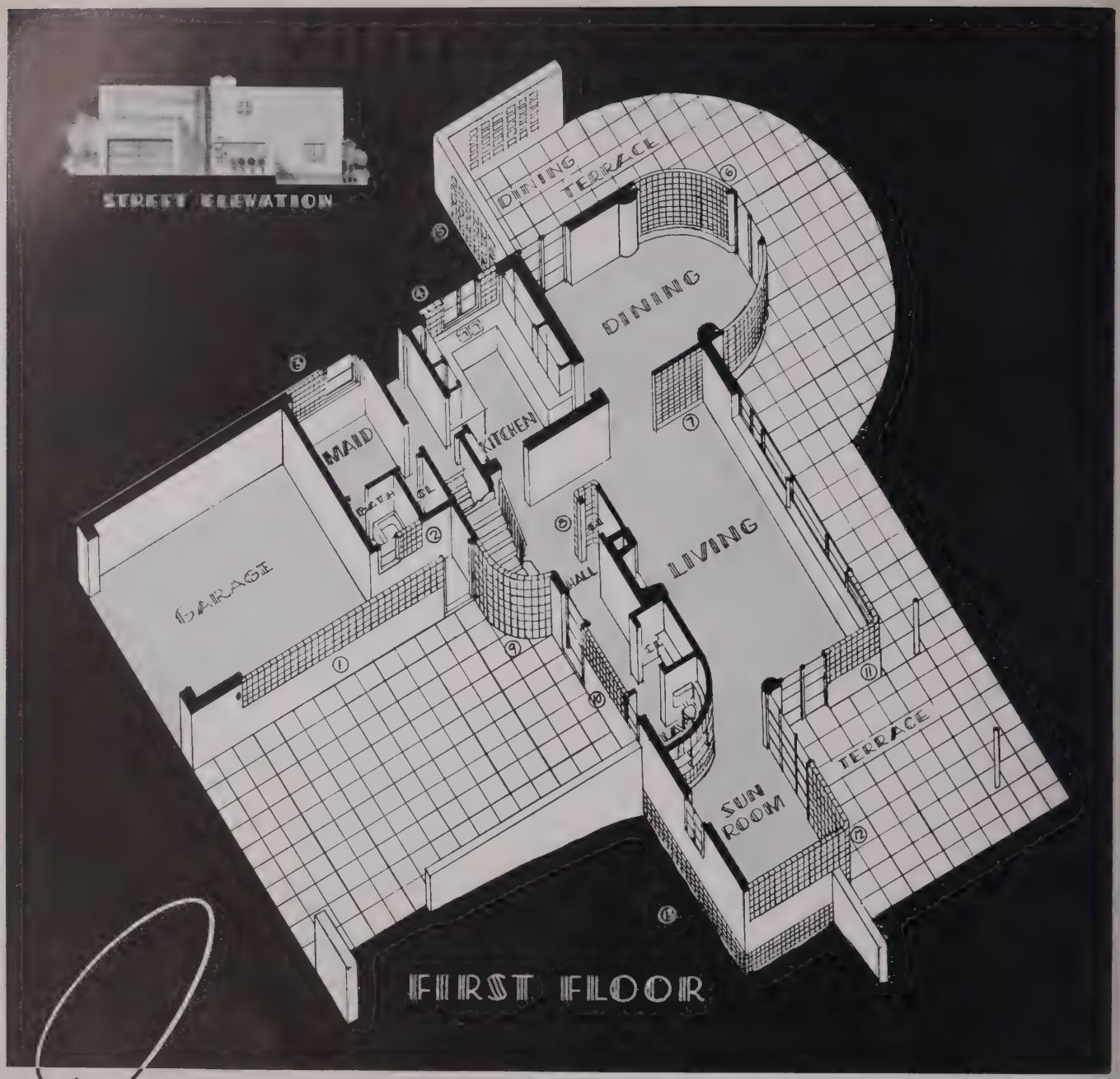
CELOTEX CORPORATION AA 11-36
919 N. Michigan Avenue, Chicago, Ill.

Without obligation to me, please send sample and full information about Celotex Vaporseal Insulating Sheathing.

Name .....

Address .....

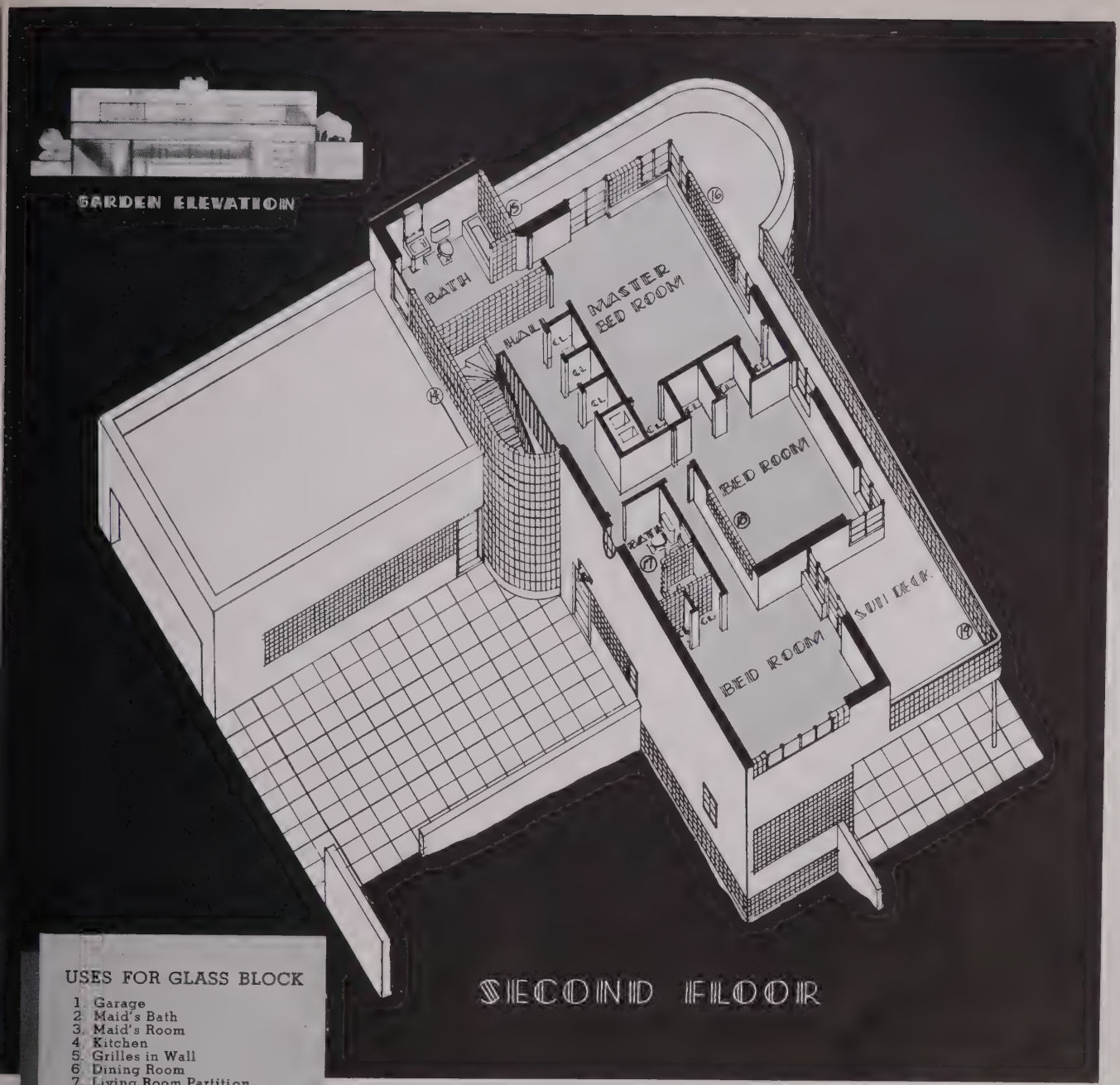
City ..... *State* .....



In scores of ways **OWENS-ILLINOIS**

GLASS MASONRY HAS BUILT ITSELF INTO THE HEARTS OF HOME-OWNERS

● Insulux Glass Masonry has created an entire new range of delightful possibilities for the home-owner who wants modern attractiveness in the house he is building or remodeling. Insulux is equally valuable in commercial and industrial use. Here is a material that retards heat flow, admits light and lends itself to almost unlimited application for unique and pleasing decorative effects. For full working details and additional suggested uses, write to Owens-Illinois Glass Company, 308 Madison Avenue, Toledo, Ohio.



USES FOR GLASS BLOCK

1. Garage
2. Maid's Bath
3. Maid's Room
4. Kitchen
5. Grilles in Wall
6. Dining Room
7. Living Room Partition
8. Hall—Decorative Panel To Be Illuminated
9. Stair Hall
10. Entrance Hall
11. Living Room
12. Sun Room
13. Basement
14. Stair Hall
15. Bath
16. Bedroom
17. Shower Bath
18. Hall—Borrowed Light
19. Balustrade

OWENS-ILLINOIS INSULUX *Glass Masonry*

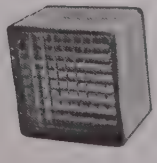
RETARDS HEAT  **ADMITS LIGHT**

PHOTO: SCHALL AND TIMES WIDE WORLD

MUNICIPAL RECREATION

BY ROBERT MOSES
Park Commissioner, City of New York

PHOTO: WIDE WORLD

NUMBERING AMONG HIS ACHIEVEMENTS IN ONLY TWO AND A HALF YEARS TENURE OF OFFICE, THE ADDITION OF 169 NEW PARKS TOTALING 3,357 ACRES, 150 NEW PLAYGROUNDS, 3 ZOOS, 8 GOLF COURSES, 1 STADIUM, 10 SWIMMING POOLS, THE TRI-BOROUGH BRIDGE, NUMEROUS RECREATIONAL FACILITIES ALONG THE MANY NEW PARKWAYS, AND THE PREPARATION OF FLUSHING MEADOWS PARK FOR THE NEW YORK WORLD'S FAIR OF 1939, ROBERT MOSES IS APTLY CALLED BY MANY "THE GREATEST ARCHITECT IN NEW YORK"

1934 there were 14,827 acres of land under the jurisction of the Park Department of New York City in individual parks and playgrounds. There was one pubathing beach which was suitable for the accommodation rge crowds of bathers. There were two small outdoor mming pools, one of which was simply a concrete tank no provision for cleaning or sterilizing the water.

f the 119 playgrounds scarcely a dozen had been deped with any thought of proper planning and all were dilapidated and unsightly condition. Central and Pros- Parks were the only two large areas which had been erly planned and constructed, and even they had red no attention for so many years that they were far suitable to serve the present needs of large city parks. ost of the park acreage had been either left to uncond public use or developed without any sort of precond plan, and what little maintenance had been carried as misdirected and had resulted in no substantial benefit e public.

ne new administration came into office with not much than a handful of executives and a large amount of tive. It found a run-down park system, under-staffed old, inefficient personnel and an assignment of some 0 relief workers, without supervisors, tools or plans ork by.

side of a month a program had been formulated for the improvement of those facilities which were adaptable to rehabilitation, and plans were under way for the construction of playgrounds, golf courses, and general park improvements.

By an agreement with the relief authorities a staff of technical designers and field superintendents was set up with personnel selected for their ability, regardless of relief or political qualifications.

PLAYGROUNDS

By the middle of the year all park structures had been repainted at least once, usable fences had been repaired and miles of unnecessary fences had been removed, lawns had been re-seeded, trees had been pruned, walks had been repaired—the park system in general had taken on a new appearance. Construction had been started on dozens of playgrounds throughout the city, new zoos in Central Park, Prospect Park and in Barrett Park, Staten Island, and on the reconstruction or new construction of 8 golf courses. With a fund of one-quarter million dollars, which had been held in trust by the City Chamberlain for 13 years for the erection of a war memorial to police heroes, 8 new playground sites had been purchased and recreation buildings had been constructed, under contract, for each of them. The general construction work around the buildings was

done with relief labor. These playgrounds were opened to public use in July.

A study of the condition and use of large park areas, and particularly Central Park, indicated that much of the vandalism and unnecessary damage to shrubbery and lawns, could be prevented by the establishment of definite areas around the perimeter for playground use. There have been completed around the edge of Central Park 18 so-called marginal playgrounds. These playgrounds are equipped with small sized swings, see-saws, slides and playhouses, shower basin and benches. They are surfaced with a resilient asphalt preparation, which prevents digging and eliminates dust. They are fenced and the gates are locked at night. Located near the major entrances, they intercept children on the way into the park and provide a place in which excess energy can be worked off without damage to the park surroundings.

In 2½ years the playgrounds in the park system have been increased from 119 dilapidated and generally unused areas to 271 modern, fully equipped and intensively used playgrounds for all ages.

The one natural bathing beach is being reconstructed to increase its capacity three-fold. A complete new bathing beach just under a mile in length has been constructed and provided with a bathhouse, parking facilities and other incidentals necessary for a development of this kind.

The parks in the city have been increased in number to 577 and in area 3,357 acres, bringing the total to 18,184 acres. Among the major new areas acquired are Randall's Island, on which has already been constructed the stadium in which the Olympic try-outs were held for 1936; and Flushing Meadows Park, which is now being prepared for the 1939 World's Fair.

SWIMMING POOLS

In July of 1934, with playground construction well under way according to a definite program, it became obvious that the next major problem of the Park Department was to provide additional outdoor public bathing facilities. Other city agencies had little more to offer. At Coney Island in Brooklyn, the familiar thronged strand extended 21 miles along the Atlantic, while on the Rockaway Peninsula, Queens, 7.4 miles of narrow beach lay between an encroaching boardwalk and the water's edge. Both of these public beaches are under the jurisdiction of the Presidents of the respective boroughs. Clean, healthful and adequate bathing facilities were practically out of the reach, both geographically and financially, of millions of the city's inhabitants.

Up to that time, the various relief administrations had been unstable and had given no promise of lasting long enough to permit the construction of substantial buildings or other types of large public park improvements. It was becoming increasingly obvious, however, that the work relief business would endure for considerable time and that large sums of money and unlimited man power would be available for use on worth while park improvements.

Work was started immediately on the preparation of plans for eight swimming pool and bathhouse units and construction was actually commenced on all eight jobs in the fall of 1934. During 1935, work was started on three additional pools, one of which was the reconstruction of the old antiquated tank which was one of the two pools inherited fr former administrations.

Only two of the new pools were constructed on land wh had not previously been at least partially developed for p or playground use. With one exception, in the areas alre developed, the entire surroundings were redesigned and h been or will be reconstructed so that there will be no duction in the facilities for active recreation and playgro use. The one exception is Hamilton Fish Park on the lo east side of Manhattan where the park area was so sn and already so intensively developed that it was impos to avoid some reduction in the space allotted to play. H ever, by careful planning the new playground and park rangement, outside the bathing area, will accommodate many people as did the former scheme.

With park land in the densely populated sections of city at a premium, intensive study was made for off sea usage of the newly constructed facilities, so that there w be no idle recreation areas. To make the new swimm pool and bathhouse units usable during the fall, winter spring, the pools and surrounding promenades were c structed so that they could be converted into playgrou when drained, and the bathhouses were designed so that dressing areas could be used as gymnasiums.

There was never any idea that these new swimming p could be made to pay for their construction but it was deer reasonable and proper that they should pay for their m tenance and operation. Their use naturally must be rigi controlled and the comparatively limited number who them should not receive this service at the expense of general public.

On the basis of estimated attendance, it appeared that city could afford to allow the free use of the pools by c dren up to 14 years of age from 10:30 A.M. to 12:30 P on week days and that during the balance of the da charge of 10 cents for children and 20 cents for adults wo pay for operation and maintenance. The operation of completed units, since they were opened last summer, wor out according to the estimates.

OTHER RECREATIONAL FACILITIES

Space does not permit extended mention in this article the numerous recreational facilities provided along the n parkways constructed or under construction in New Y City, including the Grand Central, Interborough and Lau ton Parkways in Queens and Brooklyn, the new Shore Dr Extension in Brooklyn, the West Side Improvement fr the south boundary of Riverside Park to the City-W chester line, the Marine Parkway, and the Triborough Bri parkway approaches in Manhattan and Queens. Not o are these genuine parkways with comparatively wide rig of way, flanked by landscaped areas and crossed by or mental stone bridges, but numerous playgrounds have b provided along the borders to provide safe recreation people of the neighborhood. Stopping places for auton bilists with picnicking facilities have also been construct Comfort and filling stations and cafeterias have been or being built, and walks and benches have been provided. that the parkways will not merely be of benefit to motor but also to pedestrians.

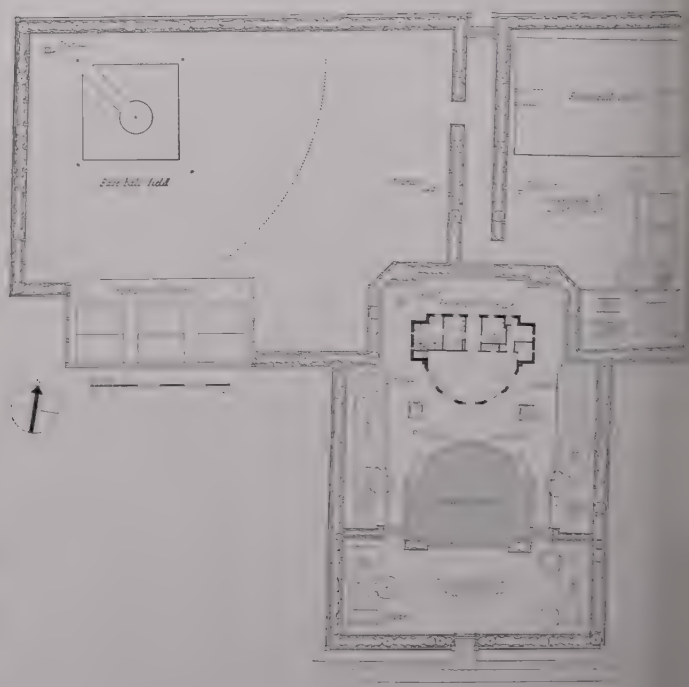
TO: SCHNALL

UNICIPAL RECREATION, DEPARTMENT OF PARKS, NEW YORK

BERT MOSES, COMMISSIONER . . . . . A. R. JENNINGS, GENERAL SUPERINTENDENT

H. LATHAM, PARK ENGINEER . . . . . W. R. C. WOOD, SENIOR PARK DIRECTOR

PHOTO: SCHNALL

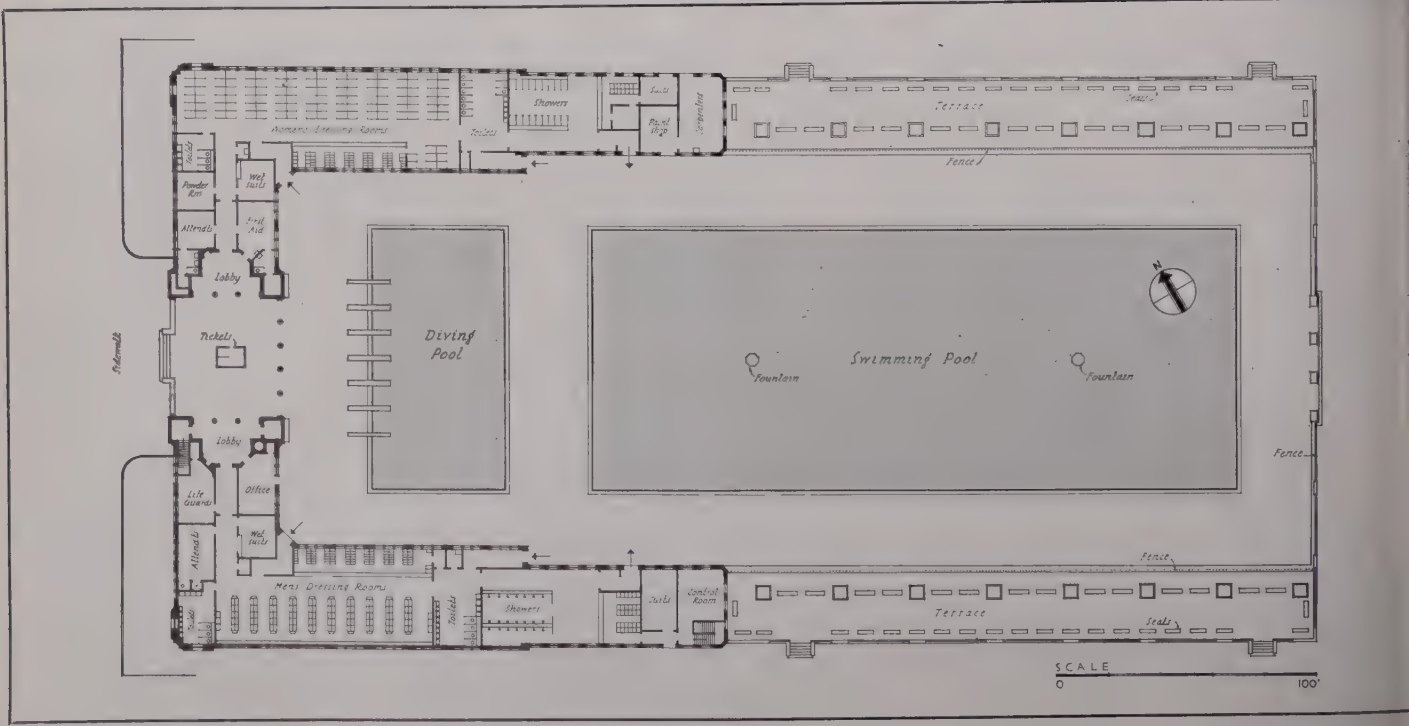


f the eighteen "Marginal" playgrounds (above, placed near entrances on the perimeter of l Park to attract the children immediately and their play to definite areas. Vandalism, harm nting and risk of accidents are greatly reduced he larger areas kept free from obstruction. The J. McDonald Memorial playground (opposite one of eight erected from funds held by the Chamberlain for a memorial to police heroes. This of playground has facilities for indoor recreation s equipment and play areas for larger children.

PHOTOS: PARK DEPARTMENT

CIPAL PLAYGROUNDS
TMENT OF PARKS, NEW YORK
CLARKE, CONSULTING LANDSCAPE ARCHITECT
RMIER, LANDSCAPE ARCHITECT


MAS JEFFERSON SWIMMING POOL

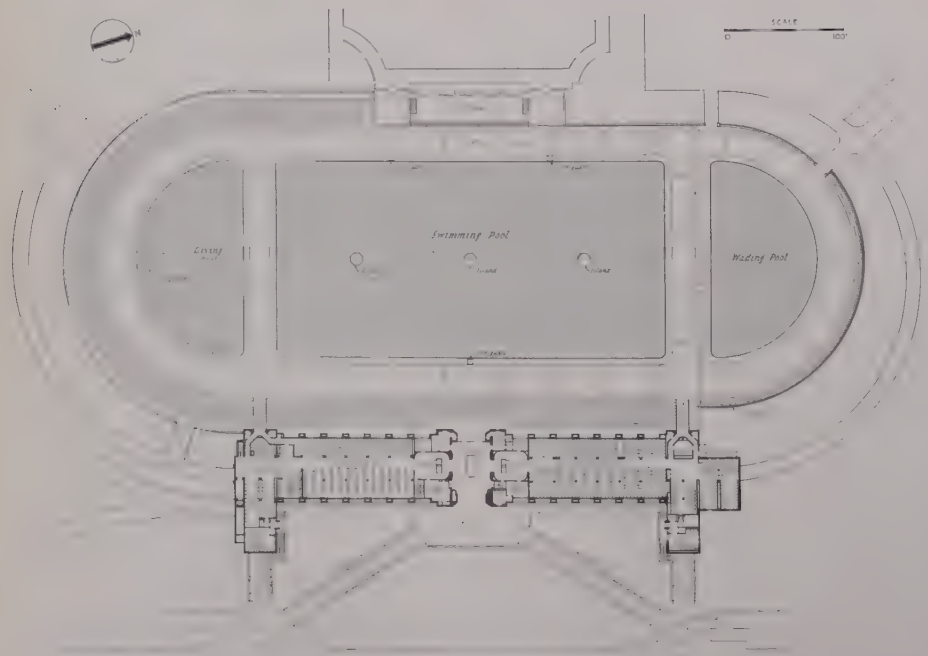

Showers
Suits
Control Room
Terrace
Fence
Scale
Toilets
Powder Rm
Wet Suits
Attend'ts
First Aid
Lobby
Nickels
Diving Pool
Swimming Pool
Fountain
Fountain
N
Lobby
Life Guards
Office
Men's Dressing Rooms
SCALE
0
100'

separate pool, for diving only, affords greater use, flexi-
ty and economy of the swimming pool proper. Varying
depth from only 3½ feet at the edges to 4½ feet at
center, the swimming pool allows an even distribution
several hundred bathers over the entire area. The prac-
lly level surface thus obtained is also more adaptable
games during the non-swimming seasons when the pool
drained. A general view of the pool (opposite page)
n the entrance gates. Detail (above) of entrance to
men's Bath House. View (right) of diving pool with
men's Bath House in background. Capacity, 2,600.

OMAS JEFFERSON POOL
PARTMENT OF PARKS, NEW YORK
MAR EMBURY II, CONSULTING ARCHITECT
ANLEY BROGREN, ARCHITECTURAL DESIGNER

PHOTOS: WIDE WORLD

PHOTOS: WIDE WORLD



Astoria, one of the largest of the poo
with a total of 78,390 square feet
pool area and a capacity of 6,200. T
semi-circular wading pool at the no
end is made an integral part
the design, but separated from t
paying area by means of a fen

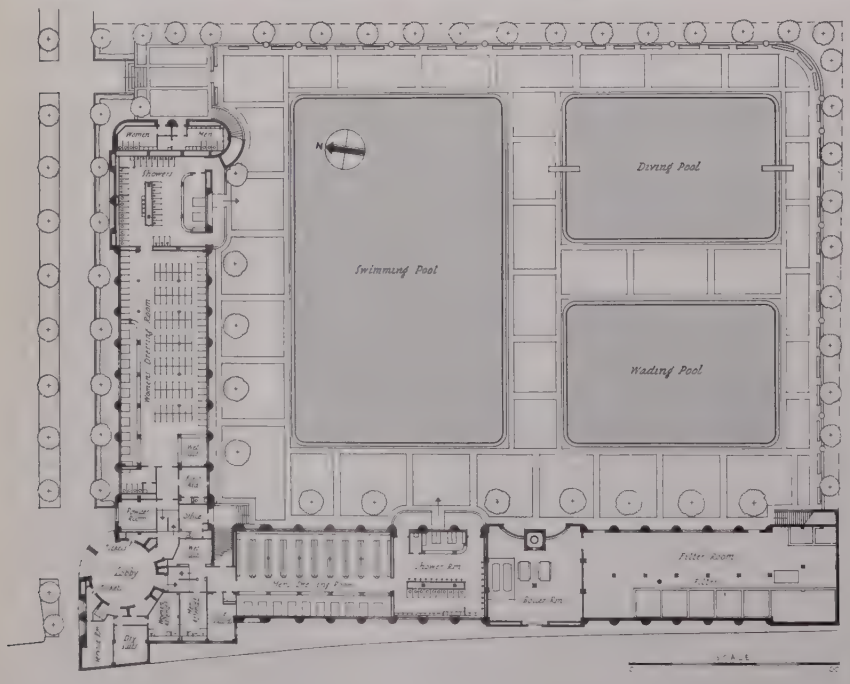
ASTORIA PARK POOL

AYMAR EMBURY, II, CONSULTING ARCHI

neral view (above) of approaches and
h house with the Triborough Bridge in
background. Glass blocks are used in
lower half of window areas to admit
t but prevent sight. Ventilating louvers
used in the upper half. One of the
tilevered concrete shelters (right) on
sun deck above the filter house.

PARTMENT OF PARKS, NEW YORK
M. HATTON, ARCHITECTURAL DESIGNER

PHOTO: PARKS DEPARTMENT



Restricted size of the plot led to th
compact layout of bath house and poo
and capacity of 3,200. The roof is use
for sun decks, observation and conce
sions. The stack for the boilers wa
treated as an integral part of the desig
and is flanked by curved panels of gla
blocks lighting the boiler room behin

TOMPKINSVILLE POOL

AYMAR EMBURY, II, CONSULTING ARCHITEC

v of the women's locker room (above) shows ample yet protected windows which do not w sight. The flat dome in the background, ted by glass block panels set in the drum, at of the entrance lobby. The underwater light- fixtures are accessible from the pipe tunnels ounding each pool. View (right) of stack and er room with men's dressing room beyond.

PHOTOS: SCHNALL

PARTMENT OF PARKS, NEW YORK
WEISBERG, S. BAUM, ARCHITECTURAL DESIGNERS

General view (above) of Highbridge Park Pool equipped for autum activities. In the pool basin, backstops for handball and basketball a erected and courts for paddle tennis, volley ball and shuffle boa laid out. The dressing areas are converted to gymnasiums for use inclement weather. General views (left, above) of McCarren Po and (left, below) of Astoria Pool adapted to autumn activiti

DEPARTMENT OF PARKS, NEW YORK

AYMAR EMBURY, CONSULTING ARCHITEC

W. H. LATHAM, PARK ENGINEER

WIMMING POOL CONSTRUCTION

THE CONSTRUCTION OF TEN MUNICIPAL SWIMMING POOLS, TOTAL POOL AREA OF WHICH IS 559,230 SQ. FT. AND BASKET CAPACITY 42,400, CALLED FOR RESEARCH OF A MOST THOROUGH SORT. BASIC PRINCIPLES THAT RESULTED FROM THIS STUDY AND THEIR APPLICATION TO PRACTICE SHOULD BE OF TREMENDOUS IMPORTANCE

W. H. LATHAM

Engineer, City of New York Department of Parks

HE design and construction of municipal swimming pools o fit conditions in New York City present numerous lems for which the answers are not given in the back ny book yet printed. The ten new pools constructed by Department of Parks required all types of construction ing from simple concrete footings to piping, mechanical electrical equipment which would do credit to a modern n liner. The work was only complicated by the fact that d to be done with work relief funds, which placed all ner of restrictions and regulations in the kinds of mate- which could be used and on the proportion of money h could be spent for the purchase of materials and equip- t.

he sites for these pools were selected first in proportion ne density of population in the various sections of the and, second, according to available park land. No new was purchased and in some cases the locations were not leally suited for this type of development as they could been. However, with the great demand for suitable ing accommodations within the city limits, a pool of st any size located at almost any spot in the city would sed to capacity.

few basic principles, adopted before plans were pre- d, were followed in practice.

To avoid the danger inherent in the mingling of divers swimmers, diving areas are kept apart from swimming s, as far as local conditions permit.

All swimming and diving pools are provided with erwater lights for night use.

At least one dimension of every swimming pool is a iple of 55 yards, so that swimming competitions can eld at standard distances in either the English or metric ems. The largest pools constructed are 165′ x 330′.

A wading pool for small children is a part of each lopment; it is located in the free playground area out- of the general swimming area.

Each swimming and diving pool is surrounded by a el which gives access to all plumbing and wiring which ctly serve the pool.

Because of the past history of neglect and indifferent ation in the city park system, all features of these de- pments were designed for a maximum of life, a minimum aintenance expense, and the greatest simplicity of opera-

The designs, as far as possible, called for the use of c materials which could be fabricated with common labor, use of the necessity under the various work relief ad- strations of making the labor costs higher than the proportion which is customary in construction work of this type.

The capacities of the various pools were estimated at 20 square feet in swimming area, and 50 square feet in the diving area, per person. These capacities were determined from all available publications and from numerous public authorities who had had experience in the operation of swimming pools. The partial season of operation of the new pools in New York City has clearly demonstrated that a swimming pool in a densely populated metropolitan area will accommodate one person to every 10 square feet of water area. This does not mean that the water itself will actually be occupied by one person to every 10 square feet; actually, a swimming pool is operating to capacity with one person to every 40 square feet. The other 75% of the patrons will be sunning themselves on the promenade, walking around, or just sitting on the edge of the pool watching those who are swimming.

It was also found that the capacity of a diving pool should be estimated from the number of boards not from the area of water. It was determined that each board will accommodate 12 persons and that the minimum safe water area per board is 15 feet in width and 40 feet in length. Although under peak loads the diving facilities seem to be inadequate, it is not economical to provide enough boards to satisfy the full demand. A reasonable ratio is one board to every 500 patrons.

In general, the promenade decks around the pools are 20 feet in width and they average in area 65% of the water area of the pools.

The depths in the swimming pools vary from 3½ feet around the edges to 4½ feet at the drain grates in the center. Some of the larger pools were constructed with a so-called beach section along one half of the side nearest the bathhouse. At the beach section, the scum gutter is exactly the same as it is around the rest of the pool but the water depth is reduced by bringing the bottom up uniformly from the center to a line six inches below the lip of the scum gutter. The depth of water in the swimming pools was determined as being deep enough for ordinary swimming and yet shallow enough for all non-swimmers and for any children old enough to use the pools alone.

The diving pools were all constructed with a uniform depth of five feet around the edges. At the five-foot depth, there is a 12-inch shelf which permits most people to hold onto the edge of the scum gutter and reach the shelf with their toes. The bottom drops off from the edge of the shelf to a depth of 11 feet under the 3-meter boards and 16 feet under the 10-meter platform at the Astoria pool.

CONSTRUCTION

The pool tanks were constructed of reinforced concrete with all expansion joints waterproofed. No admixtures were used to waterproof the concrete itself. Where sub-surface conditions required it, underdraining through a bed of crushed stone was used.

The bottom slabs of the pools were finished with a smooth, wood-float, monolithic finish, rough enough to prevent slipping by bathers but smooth enough to be used for game playing when the pools are drained during the non-swimming season.

Scum gutters were surfaced with a water-green glazed terra cotta with a baked-in sand, non-skid surface, laid in 12″ sections. The tile was carried 12 inches below the lip of the scum gutter and back into the promenade deck 12 inches. Contrary to the usual practice, the scum gutter is 7 inches deep and 18 inches wide. This permits easy cleaning, keeps the scum gutter open to sunlight, and prevents people from catching their feet in it.

The promenade decks were surfaced with a special tile, terra cotta in color, and with a non-porous surface rough enough to prevent slipping when wet. The promenade tile was selected for its density and uniformity so that it could be easily cleaned by flushing with a hose, and to prevent the harboring of bacteria of any kind.

All railings, ladders, and exposed plumbing and drainage fixtures are either brass or bronze to reduce maintenance and deterioration.

Standard 16-foot white ash diving boards were used at all pools. They are set at ½ meter, one meter, and three meter heights, and at locations where competitions are expected, they are provided with adjustable fulcrums.

City water is used in all the pools. The water is recirculated three times every 24 hours, filtered, treated with soda ash and alum, and sterilized with chlorine and ammonia.

Reinforced concrete open gravity filters were used on seven of the developments and steel pressure filters on the other three. The open gravity type of filter was considered more desirable in these developments because of the great volumes of water to be handled and because of the simplicity of operation and control which are characteristic of this type of installation. Pressure filters were used on three of the jobs where foundation conditions were such that it was not practical to construct the concrete tanks.

The water is sterilized with chlorine gas and anhydrous ammonia, introduced by the usual type of vacuum feed apparatus. Soda ash and aluminum sulphate are fed into the water mechanically, to form the floc on the tops of the filter beds. Each pool is equipped with a portable vacuum cleaner to remove dirt from the bottom and sides without draining.

The sterilized water is injected into the pools at 20-foot intervals around the perimeters, 10¾ inches below the surface. The injectors are designed to give a flat horizontal jet which spreads the water so as to secure greater diffusion of the sterilizing agents. The larger pools are equipped with small islands in the middle which house additional injectors to feed sterilized water to the central portions of the pools.

Each individual injector is valved so that the rate of flow in any part of the pool can be adjusted to insure uniform distribution of filtered and sterilized water, or so that increased flow can be supplied to those points which may subject to abnormally heavy use. The nozzles of the injecto are also arranged so that a deflecting plate can be clamp on to direct the flow toward the bottom of the pool, if ne essary, to insure uniform circulation of water.

In most large pools past experience has indicated a de stagnant area in the corners formed by the side walls a the bottom. To overcome this condition, Park Departme engineers designed a special by-pass arrangement by whi this stagnant water is sucked up from the bottom and injected through the injector nozzles so that it is resteriliz by the fresh water coming from the treatment tanks.

On six of the jobs, the water is circulated by centrifu pumps connected directly to electric motors. On the otl four, the pumps are operated through speed-increasing ge by Diesel engines. The use of Diesel engines was determin upon partially as an experiment because prelimina estimates indicated a substantial saving in operating co which would more than compensate for increased initial co inside of four to five years.

The results of studying the comparative operating a maintenance costs of the two types of power plants w determine the type to be used on any future developme of this kind which may be constructed by the City.

LIGHTING

Underwater flood lights are set in bronze housings c in the pool walls. In the smaller pools, 500 watt units wo used and in the larger pools, 1500 watt units. On all lig ing units, the lenses are held with bronze rings and ma water-tight with rubber gaskets. The backs of the lighti fixtures can be removed from the pipe tunnel so that co plete fixtures can be changed or worked on without dra ing the pool, as long as the lenses are tight. The 500 w units are cooled by air vents in the back plates. The ho ings of the 1500 watt units are double walled and pool wa is circulated through the spaces between the two walls to c the units.

Lights are spaced according to the size of fixture and de of water. In general, they are 9 feet apart on the walls the swimming pools, and on each face of the octagonal islan in the larger pools. In the diving pools, they are 3′-10″ low the scum gutter and 7 feet apart along the wall.

Each swimming pool and diving pool is completely s rounded by an access tunnel five feet wide with a minim head room of five feet. The wall of the pool forms one w of the tunnel and the roof of the tunnel is the underside the slab supporting the promenade deck. Access to the tu nel can be had from the filter rooms and from manho in the promenade deck.

The tunnels carry all recirculating water pipe around pools, the drain lines from the scum gutters, and electri feeders for the underwater flood lights. These tunnels g access to valves which control the flow to each main sect of the recirculating feed lines and to each individual inject

Although these pipe tunnels increase the construction c of a pool, they give complete flexibility in the control water recirculation, and they allow all ordinary maintena work on recirculating and underwater lighting lines and f tures to be done without disturbing the operation of the po

: PUBLISHERS PHOTO SERVICE

The Alcazar from the left bank of the Tagus River with the Alcantara Bridge in the foreground

TOLEDO

Built upon a commanding granite hill, Toledo is one of the most ancient cities of Spain. Capital of the Carpetani, it was captured by the Romans in 192 B.C. Athanagild, the King of the Visigoths, made it his Capital in 567 at which time it was the scene of religious and political struggles between Catholic and Arian. In 587 the Catholics gained control. Under the name of Tolaitola, the chief stronghold of the Moors, it had four centuries of great prosperity through the manufacture of steel arms, silks and woolens. Recaptured by Alfonso VI, it was the Capital of Spain until 1560, after which its decline was rapid.

PHOTOS: PUBLISHERS PHOTO SERVICE, INC.

E ALCANTARA BRIDGE, spanning the Tagus River, is of Moorish origin. The nt structure dates mainly from the 13th Century with some later minor additions. It was means by which the Cid, first Alcaide of Toledo, entered the city with his followers in . The East Gate (opposite page) looking toward the Alcazar. The derelict Castle of San ando, (above) built by Alfonso VI, dominates the bridge from the left bank of the river.

PHOTO: PUBLISHERS PHOTO SERVICE

FACING PHOTO: EUROPEAN

THE INFLUENCE OF THE MOORS is constantly evident in the narrow, winding streets with their many
tals in Toledo. The double towered Puerta del Sol (above), in the Mudejar style, was probably built about
The bas-relief in the tympanum representing St. Ildefonso receiving the chasuble is of a later period. The
del Cambrón (opposite page), formerly called Bab al-Makara, was built by Alfonso VI in 1102 and restored in

PHOTO: WIDE WORLD

CERVANTES lived in the house called Posada de la Sangre (opposite page) which is seen at the right through the Arco de la Sangre de Cristo. Domenico Theotocópulí (El Greco) lived and worked in Toledo. The Courtyard (above) of his supposed home shows unmistakable Moorish influences. It is built on the foundations of a house which belonged to Samuel Levy, rich Jewish treasurer of Peter the Cruel.

PHOTO: PUBLISHERS PHOTO SERVICE

The Cathedral rises high above the curiously oriental-like streets of Toledo.

ANKS AND BUILDING BOOMS

IS jerry building rampant? Will the home building racket be in full swing next spring? Can homes be made wise investments for both the banks and for "owners" as well?

• Home building leads and will continue to lead in the present upswing of building activity. The annual need for half a million new dwelling units was not met this year but next year this figure should be realized. Increased economic confidence (and income), banks with funds seeking safe investments, a standardized form of home financing (on the single amortized-mortgage principle), insured mortgage loans, fewer foreclosed properties, less distress-selling,—all these are factors pointing to *more* home building in 1937. More, yes, but will it be *better?*

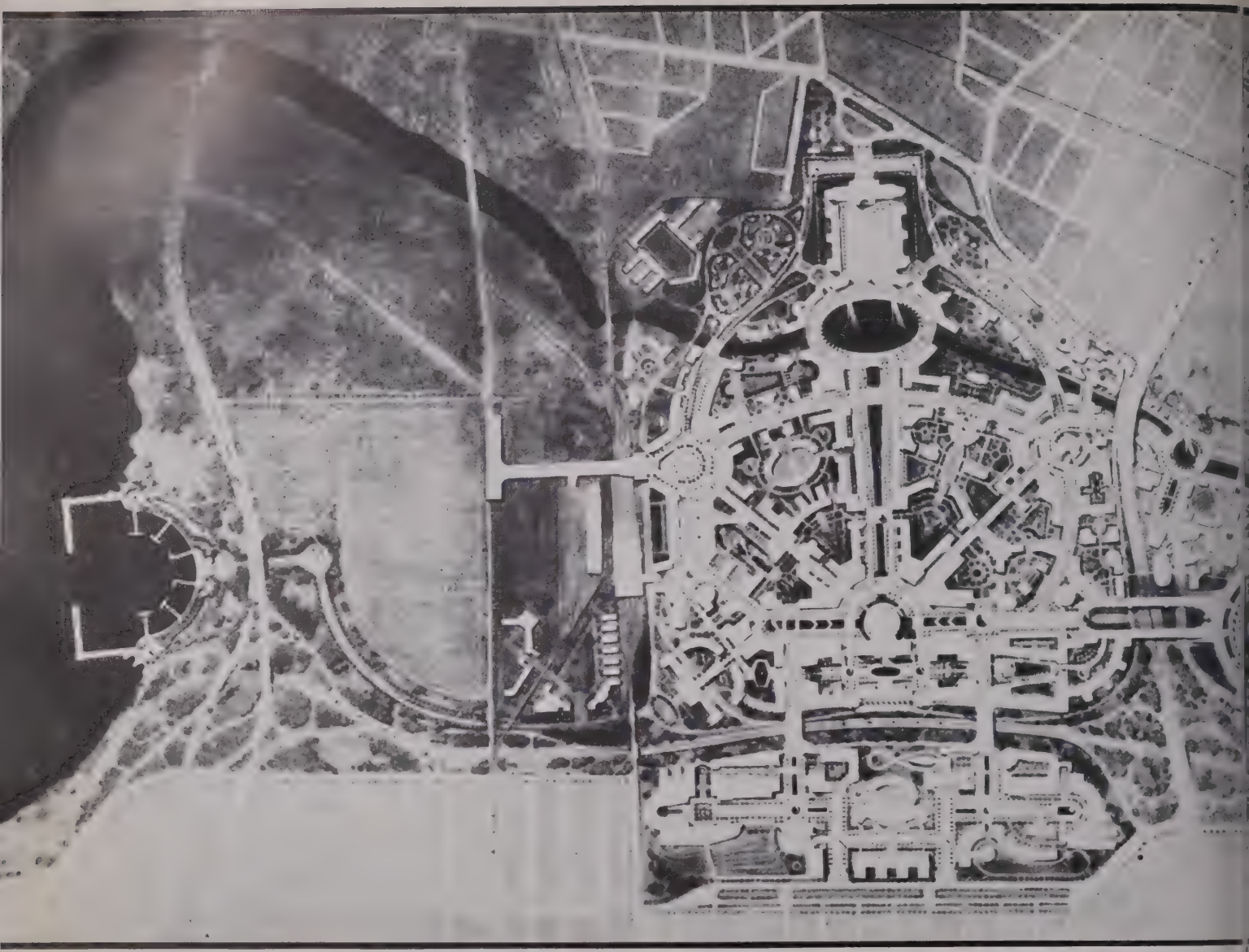
• Much of this year's building is but little if any better than the shoddy, poorly planned jerry building of the boom of the twenties, in spite of FHA. The banks' best insurance of the safety of the investment in building loans is well-designed, thoughtfully planned, soundly constructed homes. And the best insurance that the homes will be just that is the employment of competent architects not only to design, to put in "selling features" and "talking points," but to *supervise the construction.* Specifications are mere scraps of paper,—even if the loan is obtained and insured because of their promising phrases,—unless the quality materials they call for actually are made part of the house. Setting minimum standards of specifications for houses on which loans will be made is a step which progressive (conservative) banks have already taken, and more are taking. But it is only one step. To make these specifications realities in the houses requires the supervisory services of responsible, professional architects. This is true whether the loan is made to an individual owner or to an operative builder. The time is coming rapidly when lending institutions will realize that their best insurance lies in professional integrity. Banks will protect themselves, their depositor and the home owner by making the employment of a supervising architect a condition of their loan contract.

• Soundness of construction and quality of equipment are not in themselves, however, a guarantee of the value of the house (on which the mortgage rests). Proper planning for use and convenience, orientation, site-planning and style all affect resale value, and in these the architect's knowledge, experience and creative ability are necessary if the best house for the money, for the site and for the comfort of the owner is desired. These services become part and parcel of the house; essentially they make or break the house. For this reason the fee of the architect is included as an integral part of the cost of the house when loans are being made. This added increment in the resale value of the house (added by the architect) is just that much additional protection for the lending organization and its depositors.

• The banks can and will in these two ways protect investments; the architect-designed, architect-superintended house will be their best collateral. Of course, there will be cheap imitations of these better houses; jerry builders will copy. However we believe that the increased sales competition which will come with the residential building boom will force better planning, better design, better construction, and that the architects' houses will sell faster and at a premium. Imitators thus will be forced to offer better houses and the standard of the whole will be raised. Houses built next year and after will be better,—because banks and lending institutions now know that permanent values of the homes on which they lend can be insured by competent architectural design *and* supervision of construction. The profession is ready to serve. Individual architects and all architectural organizations must see to it that the banks are aware of the facts, must collaborate with the lenders to eliminate the practices that have brought disaster to home building in the past.

Kenneth K. Stowell

EDITOR



THE NEW YORK WORLD'

THE theme is the creation of a better and fuller life—the advancement of human welfare. All that has been learned, or discovered, or fabricated toward this end, in the one hundred fifty years since George Washington's first inauguration as President in the City of New York: all that is good and attainable by individuals and communities, all the goods and ideas thus far developed, will be displayed in a connected sequence, so that, seeing what is available to them, visitors to the Fair may be inspired to work with their fellow citizens for a more worthy future."

In these words the men who have undertaken the creation of New York's Fair of 1939 set their goal.

In a central tower and its connected "Theme Building," the visitor will receive his impressions of the significant alliance between the potential contributing factors making for a better world. Radiating from this center the plan pr vides ten sectors. In each of these a branch of the ma theme will be developed—Shelter, Education, Health, Recr ation, Clothing, Government and so on. Exhibitors will n pick locations; space will be allotted in a correlated whol

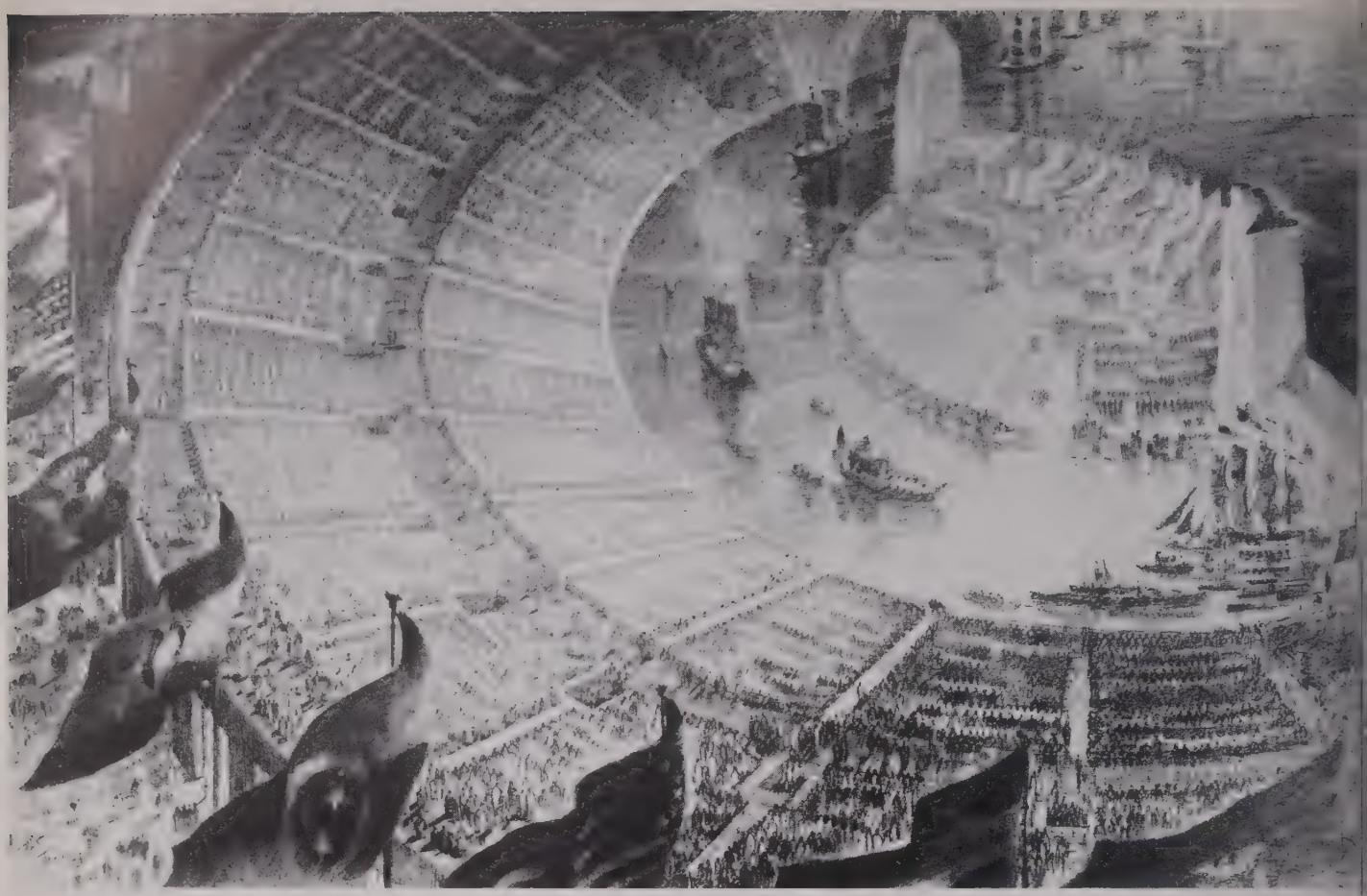
Theoretically, the ideal plan would take somewhat th form of a pie that had been cut into ten sectors, with th lines of communication between them. Practically, such plan would conflict with the necessity of handling gre crowds in comfort. Moreover, you cannot merely pour the multitudes in at a center and have them find their way ou Other factors intervene: the existing and to-be-expande means of transportation, the character of the soil—not all it would bear, for example, the structures needed for tran portation and the heavy industries.

AIR—ITS THEME AND PLAN

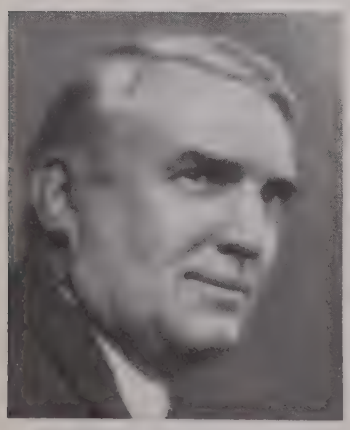
The problem of getting people to and from a Fair spread- over twelve hundred acres is in itself a staggering one. is estimated that on gala days the attendance may reach naximum of 800,000 persons. Transportation by railroad, , subway and automobile will make it possible to deliver ,000 persons per hour to the Fair grounds. Obviously re could not be just one entrance—as a matter of fact, e are provided in the plan. Once inside the gates, these ple must find a comfortable and logical distribution of ir numbers—plenty of open spaces, broad means of cir- ation, plenty of seats, plenty of shade. The traditional red feet" of the visitor have been recognized as a vital sideration in the plan.

One of the general plan's great merits is that it has form— re is a structure here on which are disposed the various elements. Axes, circulation, disposition of masses—all are in evidence, yet it is no mere Beaux Arts dream. Perfect symmetry does not raise its head to dispute the practical controlling factors. The main vertical axis has at its lower end the dominant tower of the Theme Building; at the upper end, joined by the broad tree-lined avenue, is the Government Building flanked by the states and framing a great parade ground for pageantry. Radiating from the Theme Building are the avenues leading to the sectors, with Transportation below the tower on the higher ground. Off to the right is an amphitheatre at the end of the main lagoon, with an amusement section stretching along its upper side.

It is evident that in its basic theme and in its vast plan this exposition is going to be something more than "just another Fair."

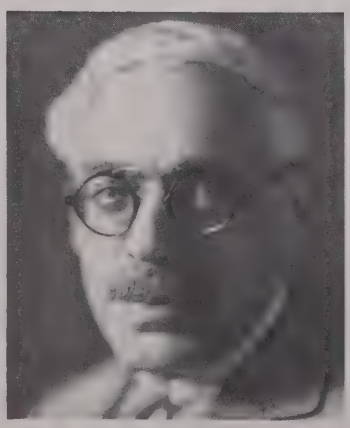


The removable stage is a feature of the vast outdoor amphitheatre



STEPHEN F. VOORHEES
Chairman

Voorhees, Gmelin and Walker; President of the American Institute of Architects; Supervising Architect for Princeton University; Former President of the New York Building Congress



ROBERT D. KOHN

A practising architect in New York for over forty years; Past President of the American Institute of Architects; Associated with the design of the Paris World's Fair in 1900

WILLIAM A. DELANO

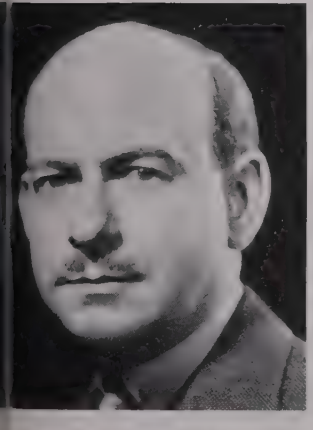
Senior member of the firm of Delano and Aldrich; Past President of the American Institute of Architects; Member of the Institute de France; Designer of many public buildings

RICHMOND H. SHREVE

Member of the firm of Shreve, Lamb and Harmon; Former President of the New York Building Congress; Associated in the design of the Empire State Building and numerous other structures

FACES OF THE FAIR—THE MEN IN CHARG

The parade ground is flanked by Government and State buildings



ALTER DORWIN TEAGUE

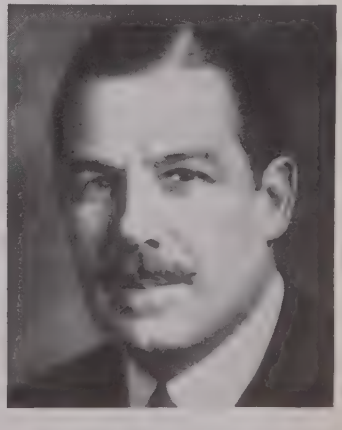
Industrial designer; has gained attention in previous exhibitions by his designs for buildings and exhibits for various notable fairs in Chicago, San Diego and Dallas

GILMORE D. CLARKE

Landscape architect; Consultant for the New York Park Department; Designer of such parkway systems as the Westchester County Parkway system and the Washington Memorial Highway

JAY DOWNER

Engineer; Chief Engineer of Westchester County Park system; built Playland Park in Rye, an amusement center; chief engineer for the Bronx River Parkway; Consulting Engineer of Rockefeller Plaza

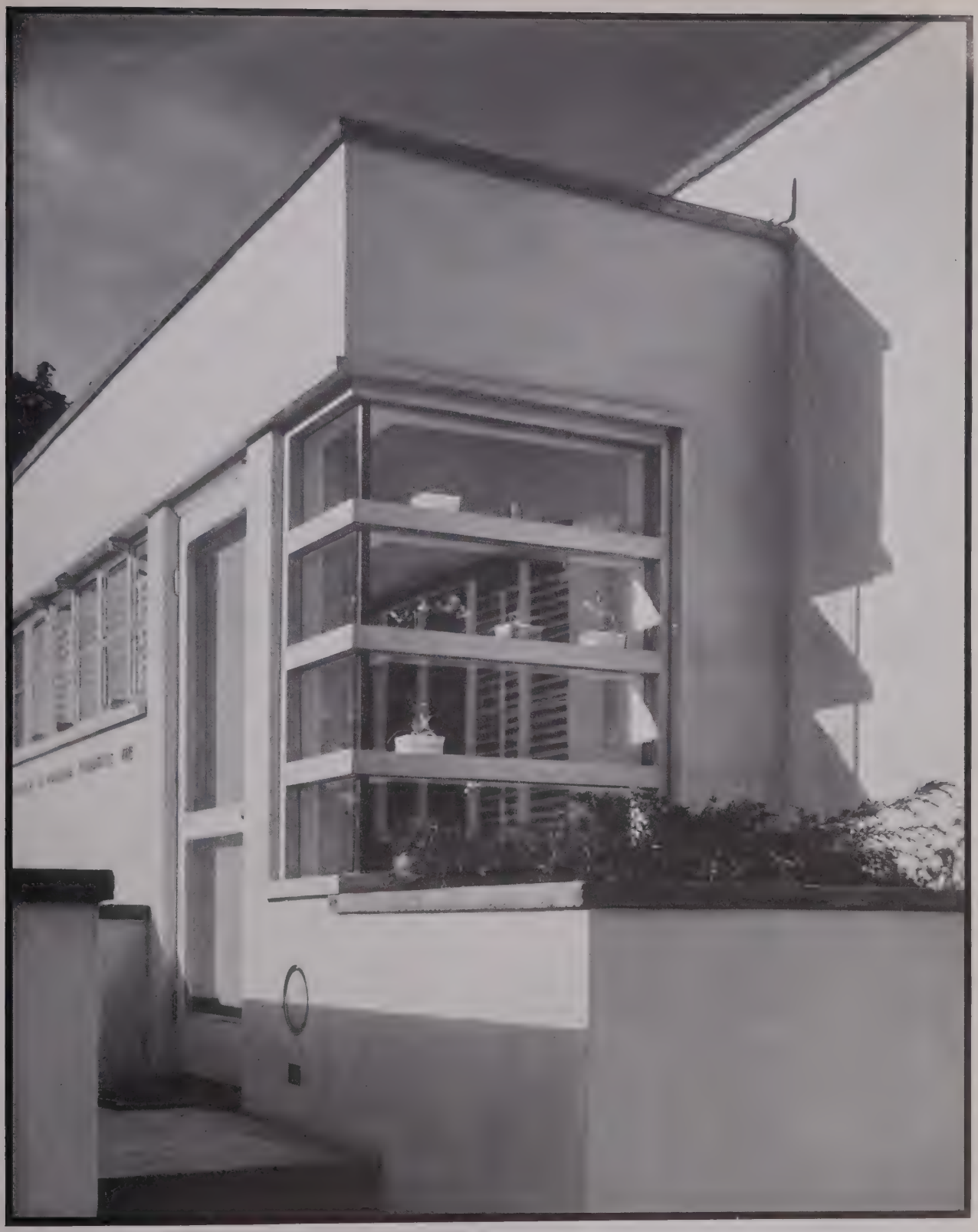


GROVER A. WHALEN
President

Chairman of the Board, Schenley Products; Former Police Commissioner of New York; Former Commissioner of Plant and Structures; Member of many civic commissions in New York City

F THE DESIGN OF NEW YORK'S EXPOSITION

This massive structure, 250 feet high, will, as the Theme Tower, dominate New York's World's Fair. Designed to house a drama panorama depicting the milestones of the past in the arts and sciences, it will correlate the kaleidoscopic elements and for of modern life into a pattern for America's future. From its portals broad avenues will radiate to the ten exhibit zones. A ser of fountains and basins along the main axis will link it directly with the Plaza of Governments and the Federal H



ONTAL OFFICE, MELROSE, MASSACHUSETTS

ROYAL BARRY WILLS, ARCHITECT

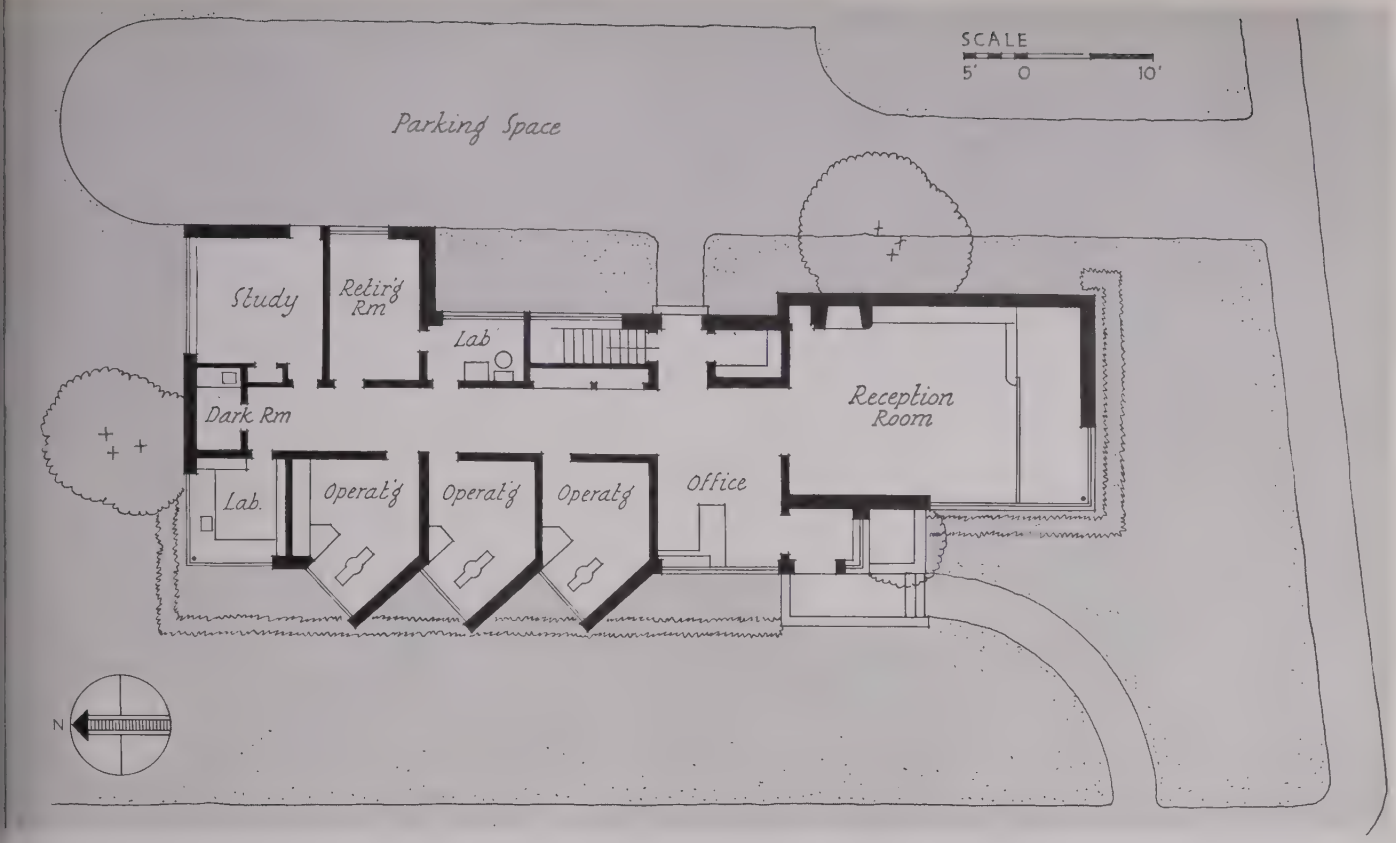
HUGH A. STUBBINS, ASSOCIATE ARCHITECT

Built of 8" cinder concrete blocks finished with stucco, organic yet reposeful character of the building makes inviting from the exterior. View from the street (abov showing staggered operating rooms which maintain priv yet allow some north light. Left, interior of laborat

DENTAL OFFICE, MELROSE, MASSACHUSET

ROYAL BARRY WILLS, ARCHITECT

HUGH A. STUBBINS, ASSOCIATE ARCHITE



distinct separation of working area and eption room, the projecting bays of the rating rooms, and the privacy of study and ing rooms, are indicative of a thorough wledge of the problem and its proper so- on. The office is accessible from either street or the parking area at the rear. w, reception desk in office. Designed by architects, it includes typewriter space steel filing cabinets. The top is of ebony

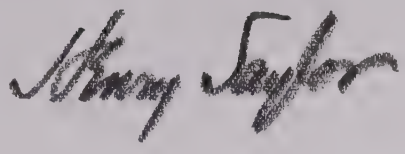
A fireplace and built-in bookcases lend an informal and restful character to the reception room shown here. Soft indirect lighting is supplied from the cove at the right of the chimney breast

DENTAL OFFICE, MELROSE, MASSACHUSETTS

ROYAL BARRY WILLS, ARCHITECT

HUGH A. STUBBINS, ASSOCIATE ARCHITECT

THE DIARY



Friday, October 2.—An eighth-inch scale model of the Oregon State Capitol starts today on its way west from Rochette & Parzini's studio. Francis Keally, who, in association with Goodhue Livingston, won the competition, took me down to have a look at it as developed through restudy of the competitive design. It looks good. What appealed to me particularly was the vast wall surfaces of white marble, untouched by ornament but serving as a foil to some intricately detailed bronze of window or door. Keally says that his chief occupation during the period of restudy and making working drawings was "keeping the garbage off."

Saturday, October 3.—Several months ago this column was considerably set up over the fact that the winner of the A.I.S.C. Annual Student Bridge Competition this year was an architect, rather than an engineer. Ralph E. Winslow, professor of architecture at Rensselaer Polytechnic Institute, now tells me that not only was the winner an architect, but the second prize design and the first Honorable Mention were entered by architectural students from his department. Moreover, last year, the three students from Rensselaer Tech who placed in the preliminary stage, and, the year before, the five students in the preliminaries and winners of the first and second prizes and Honorable Mention, were all architectural students from the same department. It would seem that the engineering students had better look to their laurels.

Tuesday, October 6.—The New York World's Fair 1939 invited representatives of collaborating professional associations and the architectural editors to luncheon today to see the plans and hear the story of what the Fair may be. To my mind the results are among the most amazing achievements in design that have appeared for many a long day. Consider the fact that it was not until the latter part of May that the Architectural Advisory Board was commissioned to devise a basic theme for the Fair and a plan which should express it. Allowing some time for organization, securing quarters, getting personnel together, there were less than three months available to do the job. Only twelve men, I believe, are on the pay roll, though various other branches of the Fair organization have contributed time and men in collaboration.

Two things impressed me: first, the breadth of vision of the basic theme; and second, the fact that the plan has form. It is not a mere labyrinth of miscellaneous units; one grasps at once the structure of it—though it is by no means a Beaux-Arts scheme—and, set down upon any spot of the vast area, one would know where he stood in relation to the whole.

Friday, October 9.—Not many years ago, the architectural profession was somewhat concerned over the fact that we were apparently standardizing our post offices without very much consideration for geographical or traditional backgrounds. The post office in Dubuque, Iowa was likely to look very much like a post office in Reading, Pennsylvania. There was considerable outcry from some of the more sensitive members of the profession to the effect that we were in grave danger of losing the elements which, in their variety, had made the early architecture of America what it is.

That danger seems to have passed away. Another has taken its place. In motoring through three states today I was impressed with the fact that all of our schools look alike. At least one can divide them into two classifications. Any big example is, or tries to be, Georgian or else an adaptation of English Tudor in brick and limestone. The Pacific Coast is still apparently conscious of its background, and designs its schools accordingly. Where else in this land is there a noticeable effort to design schools belonging unmistakably to that locality?

Monday, October 12. — In driving through the back country of Eastern Pennsylvania today, I developed the single-minded ardor of a collector. I was collecting Pennsylvania barns. They vary mainly in size, and only occasionally in color—red is the type; white the minority branch. No matter what the size, the barn has the wide overhang to the south, sheltering with the hay loft the halved doors to the stalls. On the other side, or perhaps at an end, a grassy slope ramps up to the second floor level, to be used only when the hay comes in to be stored for the winter.

The collector will also distinguish between two other characteristics: one group has naïve murals of a cow or a horse, occasionally a hog, or a sheep, painted in symmetrically disposed panels on the side or on the gable end. Probably some itinerant mural painter wandered through this country long ago and painted for his board and keep. After his departure, however, restoration and retouching followed at the hands of the hired help, with results that would surprise the original artist.

Still another characteristic, the variety of which will add to the collector's bag, is the circular design of geometrical forms painted on the barns in energetic and apparently hopeful effort to avoid the attacks of witchcraft. These marks, I believe, were elaborately devised by the powwow man or witch doctor on the basis of the owner's horoscope, and, if properly designed and kept well painted, would forever fend illness and trouble from the stock.

Tuesday, October 13.—Benjamin Betts, who is out at Purdue University helping with the experiments in five thousand dollar houses, sends us some of the first findings. One of the houses made use of steel for both exterior and interior wall surfaces, roof construction and structural members. The outside finish is a cement paint, the third coat of which was rough-textured with sand, resembling stucco. The actual cost of each operation, from foundation to painting, was recorded with meticulous care. So far as we know, there never before has been a thoroughly reliable and unbiased record of costs kept in this detailed way. One can estimate to the penny the cost of labor and materials of each item. These records, of course, will be of considerably greater value when the University has completed other houses of different types.

Thursday, October 15.—Those of us who frequent Fifth Avenue buses, have for a year or more noticed Admiral Farragut standing in the corner of Madison Square Park on the slightly sloping tar papered roof of a shanty. The setting which Stanford White and Augustus St. Gaudens devised for the naval hero was inside of the shanty. And now the Admiral has marched up to Central Park Yard. He is without his sword and its scabbard, but he still grasps the indispensable binoculars. It will be a year or more before the Admiral returns, as he must, to his Madison Square location—not the precise spot on which he stood, for Madison Square is being redesigned. Meanwhile, the North River bluestone pedestal, which also showed the effect of the

years and the weather, is being restored.

The craftsmen who move statues have, it seems, their own traditions. When they put a rope around the Admiral's waist and hoisted him from his pedestal, they turned him around after they set him down upon the ground. Since he had been looking west for so many years, the craftsmen, as usual, thought it only fair to give him a view in the opposite direction.

Saturday, October 17.—Dr. Margaret S. Miller, who is secretary of the Society of Women Housing Managers, London, is over here looking at our efforts. She gives us several good thrusts of the critic's rapier:

"You have no national program on housing as we have in England.

"You have lived so long under a regime of individualism that it is difficult for you to accept government action in connection with housing.

"Your slum problem is complicated by what I can only call slovenly municipal housekeeping. By this I mean extremely bad street paving, inadequate lighting, inadequate street cleaning and garbage collection, delay in clearing away debris after demolition, and so on."

Dr. Miller expressed surprise at the way in which our city population moves about, raveling our housing problem. In England, population is much more static. Dr. Miller adds a final word of caution which, from her vast experience, should carry a deal of weight with us: "In England we have been hammering away at the housing question for generations. We have accumulated experiences that may be of value to other countries like your own, which are just approaching reconstruction. For instance, take the question of housing management. Without management, the public money you spend on housing may be generally wasted."

Monday, October 19.—Lunched with Arthur J. Sweet, a consulting engineer on lighting. He remarked that our Portfolio of Church Lighting Fixtures, recently published, indicated with emphasis that the architect has been thinking of lighting far too strongly in terms of fixtures, and too slightly, if at all, as a vital element in composition. Mr. Sweet points out that with the open flame, then the only illuminant, the early masters of church architecture were sharply limited in the use of artificial light to produce influence harmonious with, and conducive to, the spirit of worship. Now these limitations have been removed through modern invention and modern knowledge of light control. It irks Mr. Sweet, as an engineer, to find the architect clinging to his old fetters, unaware of, or uninterested in, the freedom and the creative power which science has put into his hands.

Of course, it is not quite so simple as that, for the architect realizes that in order to continue to produce ecclesiastical interiors that encourage a spirit of worship, he cannot depart too suddenly from forms which have always been depended upon to produce that spirit of worship. The use of the gifts which science bestows always has, and possibly always will, lag behind their giving.

Wednesday, October 21.—The other day I called up Clarence Stein to remind him that a year or more ago he had piled several million brick together up in the Bronx to create Hillside Housing. We had talked about this a lot, and written more. Now that it had been in use for a year, how was it working? As a pile of brick it was an impressive architectural spectacle. As a social experiment, what could be said for it? Stein seemed to think that we had better go up there and find out, so today with George Gove of the State Housing Authority, Sir Raymond Unwin, and a group of his pupils from Columbia, we investigated Hillside Housing.

As to the test of popularity, the management has perhaps two or three apartments vacant, with the problem of choosing among many applicants the ones to whom these apartments should be rented.

A spirit of community pride is much in evidence. The grass plots are kept grass plots, not only because the fourteen hundred children respect them, but also, I imagine, largely because Mrs. Cautley had the foresight to surround most of them with low hedges to form a psychological, even though not a formidable, barrier against romping children.

Stein had provided a considerable number of rooms in the basement for community groups with great psychological astuteness. The management allowed these to remain idle and undiscovered until a group of the tenants themselves asked for space in which to conduct meetings of a men's club, a camera club, an art class for the children, and what not. Thereupon heat and light were provided by the management with the responsibility for furnishing and maintenance placed upon the group itself.

Sir Raymond was particularly interested in costs, not only of construction, but of maintenance, and was not at all surprised to find that these costs in America are practically double those in England.

Thursday, October 22.—The comings and goings of Kenneth Murchison are major events in the architectural world. Two years or so ago he left architectural practice to become a banker. Today a luncheon in the League club house marked his return to the fold. Aided and abetted by Tony Sarg—the two are practically Siamese twins since Tony gave him a blood transfusion some months ago—Ken told a large gathering some of the woes of being a banker. Both because of Ken Murchison's presence and the capacity crowd that filled the newly decorated dining room, the League surely took on today a pre-depression air.

Friday, October 23.—B. Lubetkin arrived a day or so ago from London, and lunched with our editorial staff today. London appears to be nearing the crest of a building boom. Many of the handicaps and obstructions that irk us in American practice—such as out-moded building codes and the like—are apparently far more troublesome for the London practitioner. Lubetkin told us in detail of the efforts required over a period of six months in order to get permission to build a temporary four- by six-foot tool house along a back edge of Regents Park. The drag of stupidity and ignorance among minor public officials and other guardians of the public taste and safety is one of the great handicaps to progress in architecture.

Lubetkin pointed out the inevitable development of the so-called modern movement. A group of men rebelled against the dead hand that permitted only the copying of old forms. The group gathered to itself younger enthusiasts, and appeared to be attaining a controlling hand, when disintegration started in the group because its members suddenly found that almost no two of them were fighting for the same thing. Here was a group of men who believed that anything functional must necessarily be beautiful. Here again was a group who saw merely a new set of motives, mannerisms, forms, and materials to be used. Here was a group so intense in their revolt from the traditional that they would use only forms, materials and methods that approached as nearly as possible to the opposite of the traditional. And thus what seemed to be the beginnings of a movement dissolved again into the main stream, to be replaced perhaps by some freshly inspired nucleus, gathering unto itself other iconoclasts.

PHOTOS: SAMUEL H. GOTTSCHO

Façade of the Pinecrest Apartment

'WO APARTMENTS, MIAMI BEACH, FLORIDA

. MURRAY DIXON, ARCHITECT

The building contains ten apartments, one of which is a duplex (left). Foundation is of precast concrete piles, first floor slab of concrete, second floor and all interior partitions of wood. Exterior walls are of concrete block finished with stucco. Stair halls are lighted by glass blocks

PINECREST APARTMENTS, MIAMI BEACH, FLORIDA
L. MURRAY DIXON, ARCHITECT

OCEAN FRONT APARTMENT, MIAMI BEACH, FLORIDA
L. MURRAY DIXON, ARCHITECT

...de variety of layout is achieved by the isolated "maisonette" ... the second floor duplex (right) in addition to the eight other apart-...nts. Precast concrete piles and concrete slab are used for foundation ... first floor. Second floor and all interior partitions are of wood

MODERN PLANS WITHOUT PICTURES

BY RAYMOND BAXTER EATON

MUCH interest has been aroused recently in the so-called "modern" house. Many people have absorbed only the novel exteriors and do not realize that the modern house must present a modern plan that will fit modern needs.

The period of development has passed where the architect took a hackneyed plan, moved the windows to the corners and unveiled the result to a breathless public as the last word in design. Recent developments in mechanical equipment and new construction materials and methods have done much to change the approach to the plan problem. The important part the automobile plays in the life of the present day family has been another great influence reflected in the plan of the modern house.

It must also be realized, however, that with all the changes in planning many of the old problems remain and should be properly solved. Good circulation is still of paramount importance and blank wall space is still desirable for furniture. Large windows and glass brick walls are attractive and lend themselves readily to the modern spirit but "temperance in all things" applies as well here as elsewhere. Many modern designers in attempting to provide unique elevations have so tortured the plan that the torments of the Inquisition pale beside them.

Certain general trends in modern planning may be noted by a study of houses falling in this category. The inclusion of the garage is an obvious development which has become universally recognized. The flexibility of plan resulting from new materials and new modes of living has given birth to the large second floor terrace. The circular and elliptical form is returning to favor after a long absence due chiefly to the adaptability of structural glass.

Following are a series of 49 house plans selected to illustrate the trends in planning. They are classified for architectural use into the following divisions:

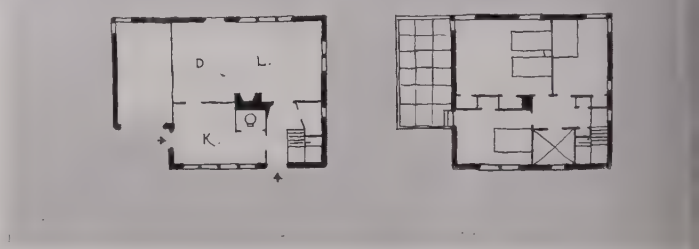
A. The 3-bedroom house, no servant's room.
B. The 3-bedroom house and 1 servant's room.
C. The 4-bedroom house, no servant's room.
D. The 4-bedroom house and 1 servant's room.

These plans are intended merely as suggestions to the creative mind of the architect and are arranged in a manner designed to facilitate comparison and analysis. All living rooms are shown at the left and all plans are drawn at the same scale. Schemes of fenestration are shown because of their close association to modern planning. The possible variations are infinite in number and this group is not intended to cover the entire field.

These plans are presented for the mutual benefit of architect and client.

Privacy is insured by exposing blank service wall t
public view and concentrating the main glass area a
the rear. There is no basement and little storage s

Lack of proper storage space, common to most ho
without basements, is evident here and the
rooms are somewhat out of proportion to the



This very tight little plan is well worked out
for the storage facilities. The entrance hall l
into the large living room and the circulation is g

A good compact plan with but one bad featur
the necessity of using the living room as a tr
route from kitchen to front door and to second fl

THREE BEDROOMS, NO SERVANT'S ROOM

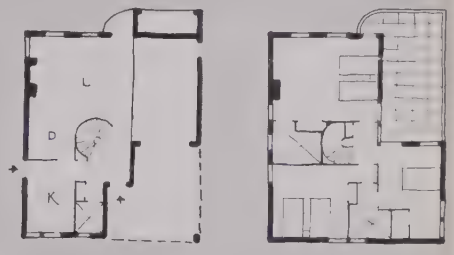
SCALE 1" = 32'-0"

A good arrangement has been evolved with the dining room part of the living room but having the effect of being separate. Small hall areas are adequate

The use of an outside stair to the lounging terrace on the second floor implies a profound trust in the policing of the neighborhood. Circulation is good

The living room entrance from the hall might easily be confused with the door to the garage

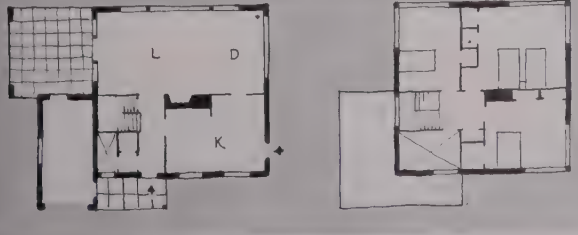
The inclusion of a combination heater and utility room in the house that has no basement is sensible



The stair is a little too prominently placed and the living room seems somewhat tucked away behind it

The entrance to the living room is indirect. Arrangement of various rooms is good but the closet accommodations in the master's bedroom are insufficient

An excellent formalized arrangement of rooms that are well related to each other. The clever planning of the second floor gives all rooms three exposures



The cellar stair location is poor as its entrance is in full view of the living room and across the main hall from the kitchen. The second floor is clean cut

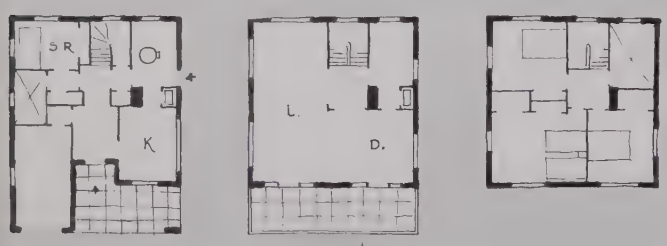
The large living-dining area open to the rear is attractive and the placing of the garage within the mass of the building makes it inconspicuous

THREE BEDROOMS AND SERVANT'S ROOM

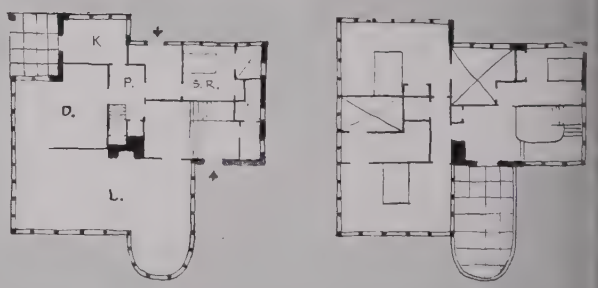
SCALE 1" = 32'-0"

This plan of generous proportions is well arranged and incorporates the feature of an enclosed sleeping porch on the second floor terrace. The door to the garage is unobtrusive but conveniently placed.

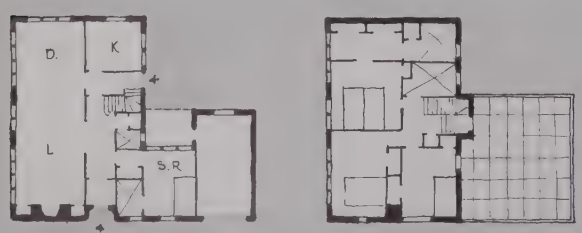
The fireplace is located a little too near the entrar to make it a natural center of a furniture group. T rooms are well disposed, but there is a too mu glass area in the bedrooms for a feeling of priva



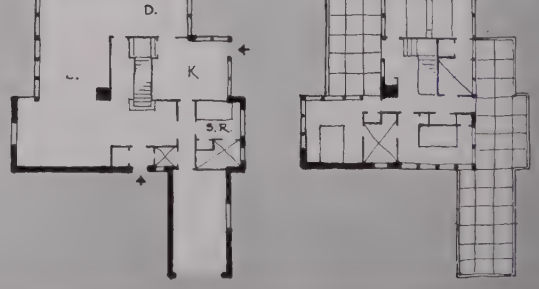
This type of house is more popular in Europe than in America. There are more stairs than the usual American housewife cares for. The definite segregation of living and service functions on separate floors is good.



The tremendous glass area makes furnishing most di cult and necessitates odd bays and alcoves to p vide focal points for furniture groups. One of t bathrooms is almost as big as one of the bedroor



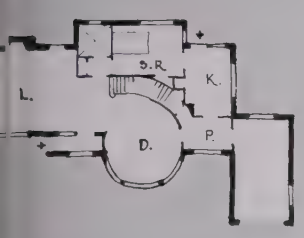
The location of the servant's room suggests its alternative use as a guest's room. Bedrooms on the second floor are cramped. The long, narrow living-dining room calls for careful furniture treatment.

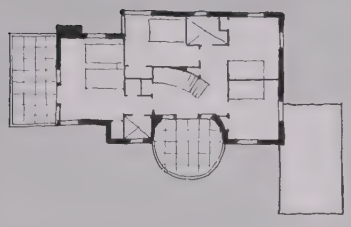


The oddly shaped living room dictates separate are dedicated to various purposes. The arrangement of se vant's room is well handled. An excessive amount of spac is given over to the narrow hall on the second floo

HREE BEDROOMS AND SERVANT'S ROOM

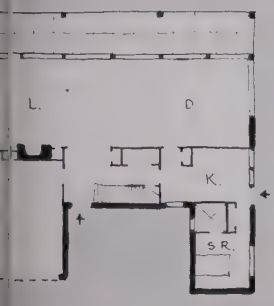
LE 1" = 32'-0"

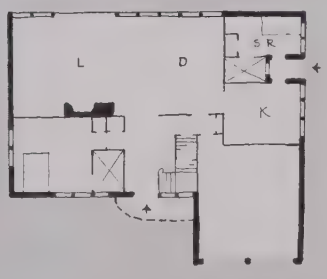


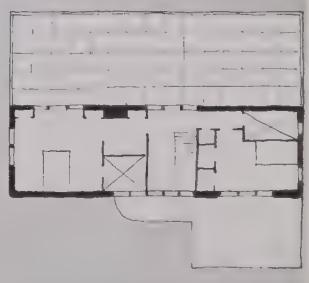


dramatic stair somewhat dominates the general
ne, but is a very interesting element of this
The open area which must be crossed in an-
ng the door bell is a rather undesirable feature.

The easy and natural arrangement of the first floor does not hint at the unorthodox handling of the second floor. The battery of inconveniently located closets gives the hall the appearance of a communal dressing room.

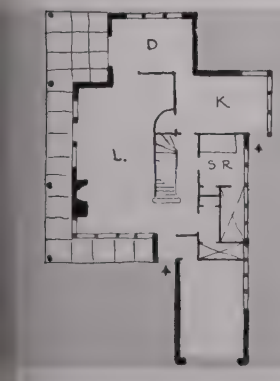


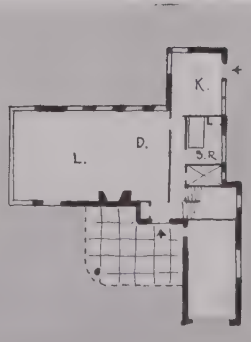


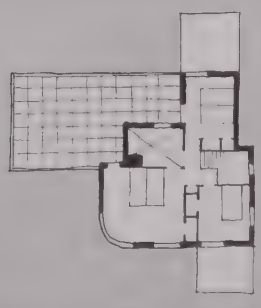


ving-dining room is somewhat narrow for its
. No lavatory is provided on the first floor, but
ise the arrangement is good. The second floor
e is large and well placed in relation to rooms.

In a plan with such a good location of rooms, it is unfortunate that there is no direct connection from kitchen to entrance hall. The accessibility of the second floor living terrace is very praiseworthy.







onnection between garage and house is excellent
also the arrangement of lavatory and coat closet.
d floor rooms are large and pleasingly pro-
ned. One bathroom might have been omitted.

The dining area is awkwardly placed in the living room. The second floor plan is very compact with hall space at a minimum. The master's bedroom is very light and airy but lacking in proper closet facilities.

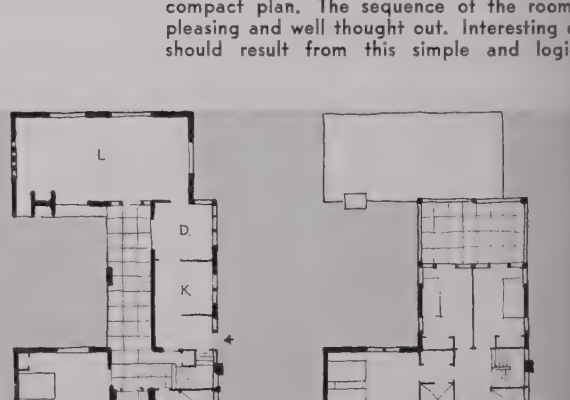
FOUR BEDROOMS, NO SERVANT'S ROO

SCALE 1" = 32'-0"

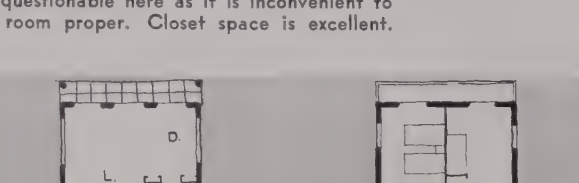
The entrance hall leads invitingly to the living room and the arrangement of the guest room on the first floor is especially well done. The covered terrace on the second floor affords an outdoor living room.

The stair is made a feature of the living room i
compact plan. The sequence of the rooms he
pleasing and well thought out. Interesting eleve
should result from this simple and logical

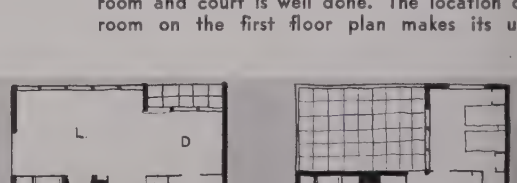
The use of the garage as a service entrance is novel and economical. The placing of the fireplace on axis is questionable here as it is inconvenient to the living room proper. Closet space is excellent.



A very open type of house for warm climates. The
aration of the kitchen and dining room from the l
room and court is well done. The location of the
room on the first floor plan makes its use fle



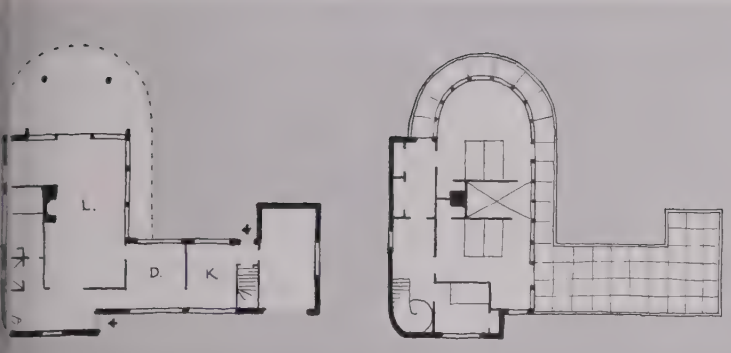
The entrance hall and stair are cramped but the general arrangement of rooms is good. The porch balancing the garage is a novel feature, but its relationship to the plan is questionable. Second floor hall is tight.



The straightforward entrance hall arrangement is p
ing and the secondary hall connecting the rear entr
is sensible. Second floor rooms are well proporti
and the terrace is properly accessible from the

OUR BEDROOMS, NO SERVANT'S ROOM

LE 1" = 32'-0"



sambling plan places the service areas in a sep- wing. The guest suite on the first floor is well d in. The small bedroom on the second floor is unate in its lack of direct access to a bathroom.

The first floor plan is unnaturally cut up by the location of the closets. The rooms themselves are well related and the second floor arrangement is good especially in the regard to closets and cross ventilation.

oms have at least two exposures by virtue bay at the back. All rooms are well propor- and easily accessible. The secondary hall on rst floor solves the traffic problem nicely.

The living and dining room areas have interesting furnishing possibilities. The opening to the garage from the house is well handled in the stair hall. The second floor arrangement of conveniences is excellent.

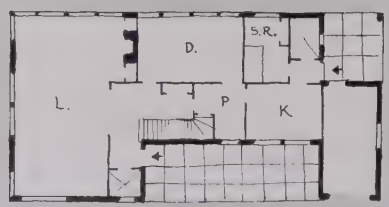
nteresting stair arrangement imparts spacious- to the hall and the kitchen is accessible to it. econd floor terrace is small and rather inacces- and the baths are disproportionately allocated.

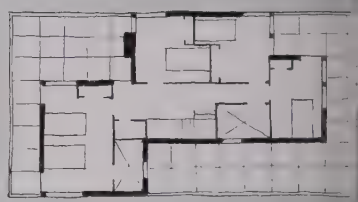
The entrance hall is long and narrow. The kitchen walls are too much cut up by openings. Second floor layout is good with closet space well proportioned. Storage closets are provided throughout the house.

FOUR BEDROOMS AND SERVANT'S ROO

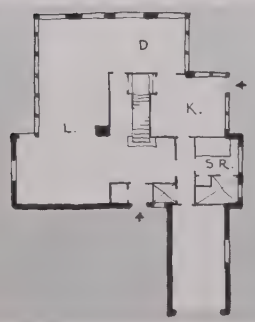
SCALE 1" = 32'-0"

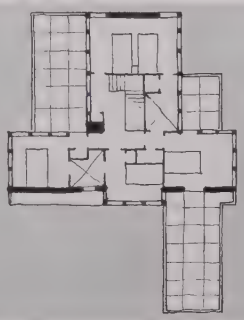
The location of the fireplace is odd in its relationship to the living room area. The kitchen is large and light. The stair is perhaps a little too prominent on axis with the front door. Second floor hall is well lighted.



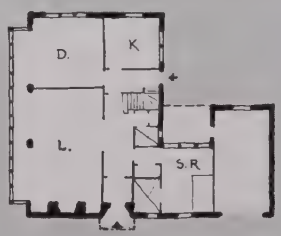


An unusual but satisfactory arrangement of room the first floor. The bedrooms are cleverly handlec closets are few and small especially in a house of size. The large terrace on the second floor is g

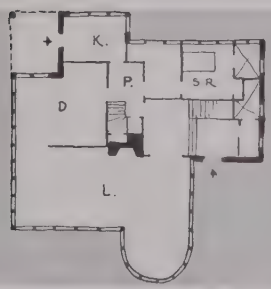


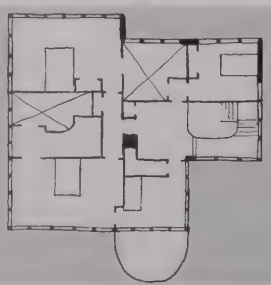


Both the first and second floor plans seem unnecessarily cut up and the various areas are oddly shaped. The bedrooms all have three exposures, however, and are adequate in size. The closet locations are unhandy.



The concentration of glass on one side of the h is unusual. The servant's room could well be ne the kitchen. The second floor plan presents a maxir of its area usable for bedrooms with good clo





The entrance hall is large and leads graciously into the living room. The location of the stair makes the second floor hall unnecessarily large, but it is in keeping with the feeling of openness that pervades this plan.

This very compact plan has interesting possibil The kitchen wall area is too broken up to pr much cabinet or counter space. The second floor rooms and closets are well arranged and proportic

OUR BEDROOMS AND SERVANT'S ROOM

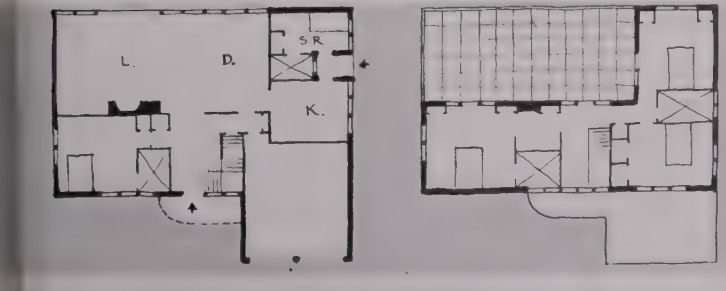
CALE 1" = 32'-0"

entrance from the garage to the house is too direct
the front door is very tightly placed. The tremen-
glass area in the living-dining room is a striking
ure. Bedrooms are spacious and closets ample.

Rooms in this plan are well related and nicely proportioned. The living room should be most attractive when furnished. The bedrooms are nicely placed about the central hall. The service door is well located.

rooms are spacious and well disposed. The fire-
is awkwardly placed between two large openings
makes proper furniture grouping a problem.
economy of the plumbing arrangement is obvious.

The living-dining room is poorly shaped for furniture, but the rooms impart an air of spaciousness. The front entrance and the stairs are cramped. Bedrooms are pleasant and airy. The balcony assures privacy.



rvant's room is well isolated and cleverly placed.
ooms are all of comfortable size and little space
sted. The terrace should be a most attrac-
utdoor living room and is accessible from hall.

This compact plan is very livable. The various rooms are excellent in their relationship and the symmetrical distribution of rooms on the second floor presents a simple but pleasing arrangement. Terraces are good.

The victim of trout fishing gets a dreamy look in April and violent in May and June. Whether the disease is caused by spirochette, fly or worm is unknown, but it recurs annually, attacks the young and is inheritable. Lorimer Rich (man and boy) and his daughter are victims.

What at first would seem a beac umbrella actually turns out to b Palmer Sabin of Pasadena, anothe Izaak Walton. The costume woul do very nicely for almost an Beaux Arts Ball or for singin "La Cucaracha" in the bathtu

ARCHITECTS AND AVOCATIONS

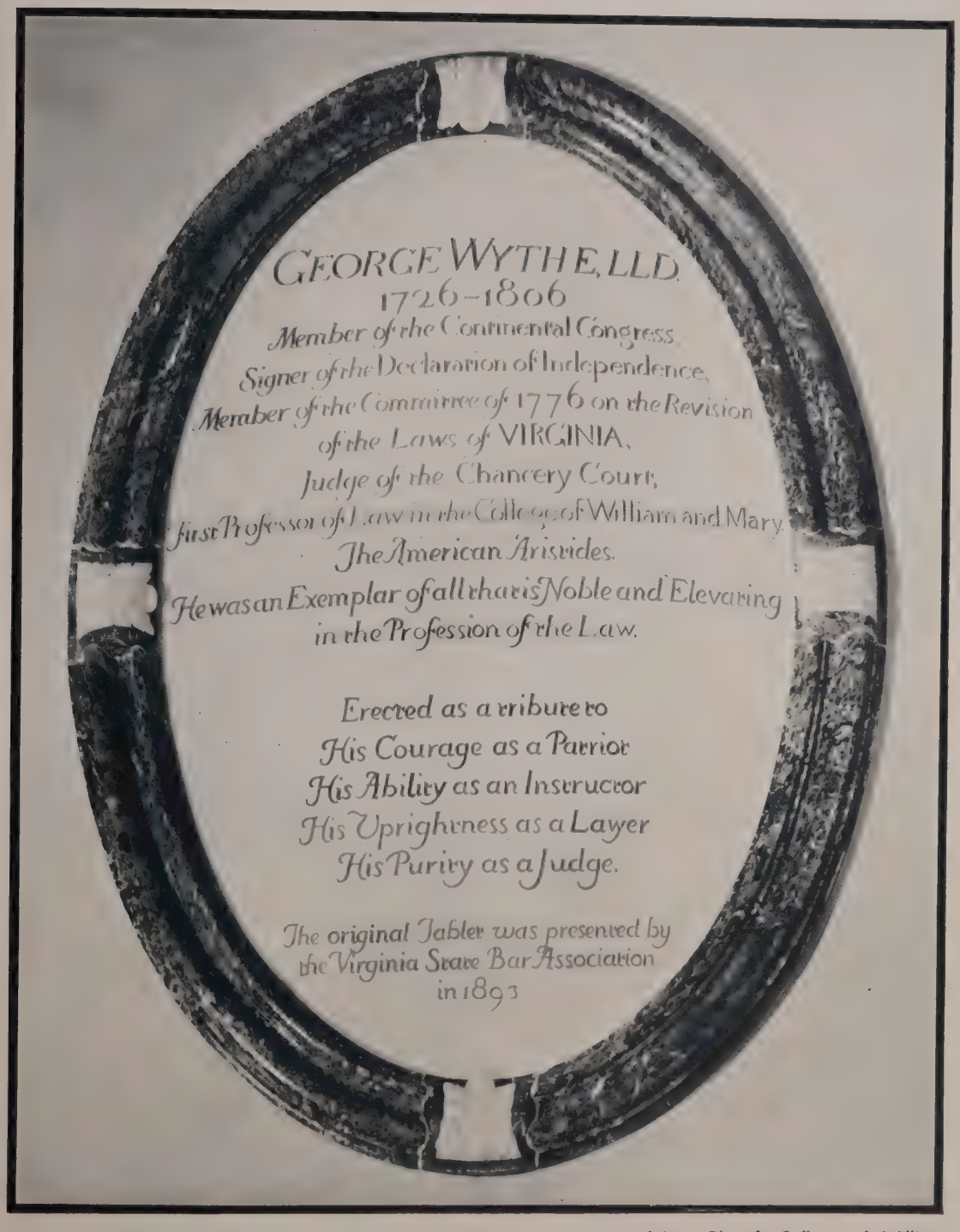
The lyfe so short, the craft so long to lerne,
Th' assay so hard, so sharpe the conquering.
—Chaucer.

The gardener's lot is to dig, plant, prune, weed, spray and water, with small material and vast spiritual results. Lois Lilley Howe, F.A.I.A., hastens to alleviate the thirst of a budding rose.

In a world of constant bustle and hurry, it is nice to know that William Dewey Foster's avo tion is simple sitting. The setting is from the garden of his "boondoggling" house in Geor town and the lady is Mrs. Altman whose husband, Charles Altman, University of Chica Near East archeologist, lurked behind the candid camera to get this bit of rustici

ORTFOLIO OF MEMORIAL TABLETS

NUMBER 121 IN A SERIES OF COLLECTIONS OF PHOTOGRAPHS ILLUSTRATING VARIOUS MINOR ARCHITECTURAL DETAILS



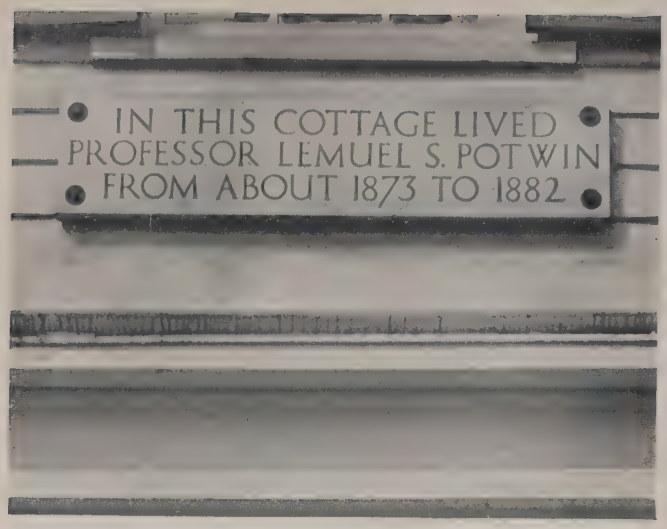
Wren Chapel, College of William and Mary, Williamsburg, Va.
Perry, Shaw & Hepburn

PORTFOLIOS IN PREPARATION

Cast-Iron Treillage, December . . . Outdoor Paving, January . . . Shop Windows, February . . . Porch Columns and Posts, March

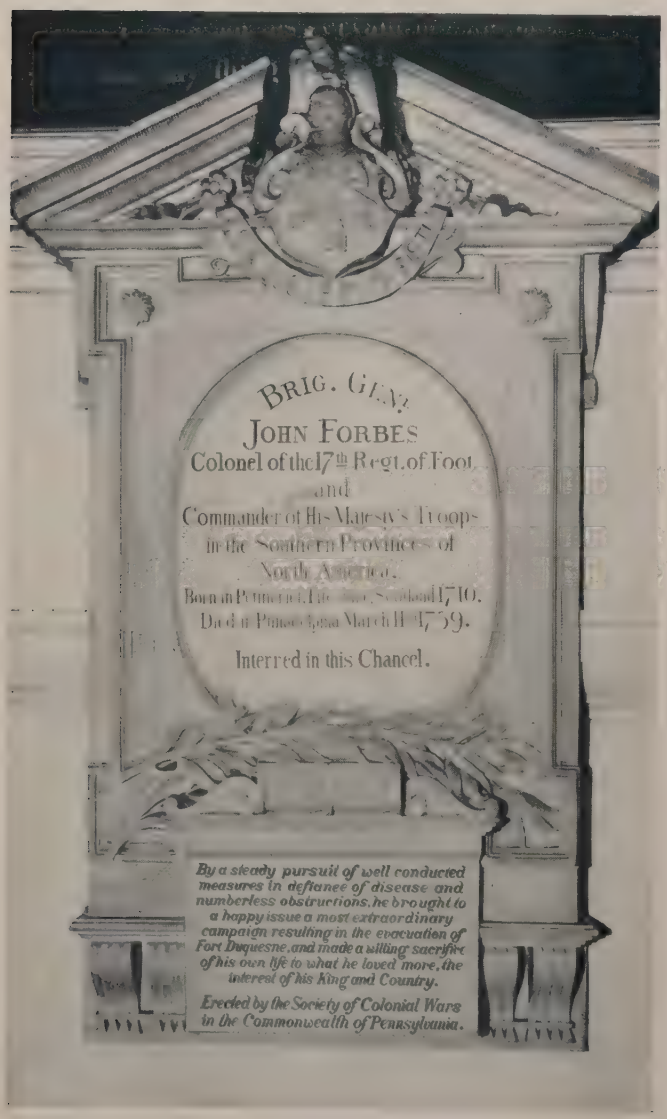
The Editors welcome photographs of these subjects. Forms close six weeks in advance of publication.

A list of the subjects that have appeared will be sent upon request. Certain of these past Portfolios are available to subscribers at 25 cents each; five for one dollar.

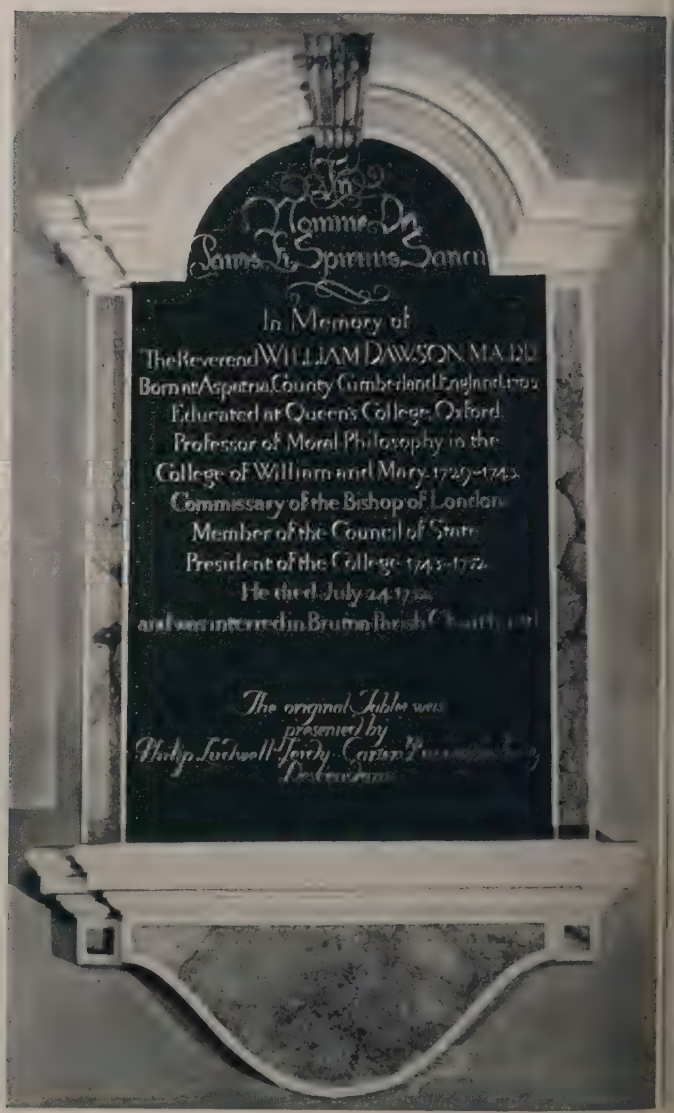


Ivory white; incised letters and bolts in dull red
T. B Hapgood

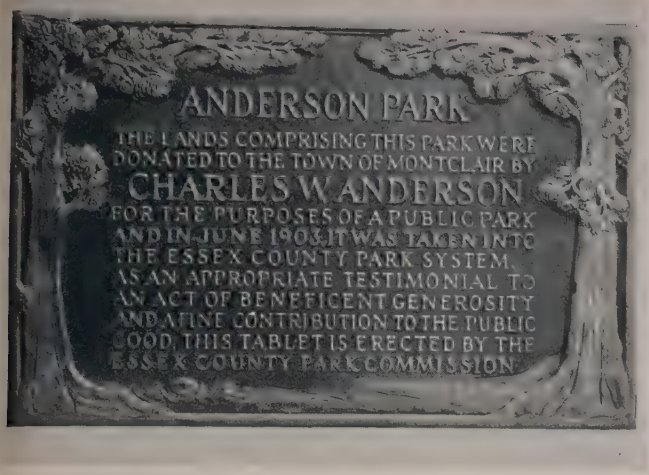
Affixed to a tree
T. B. Hapgood



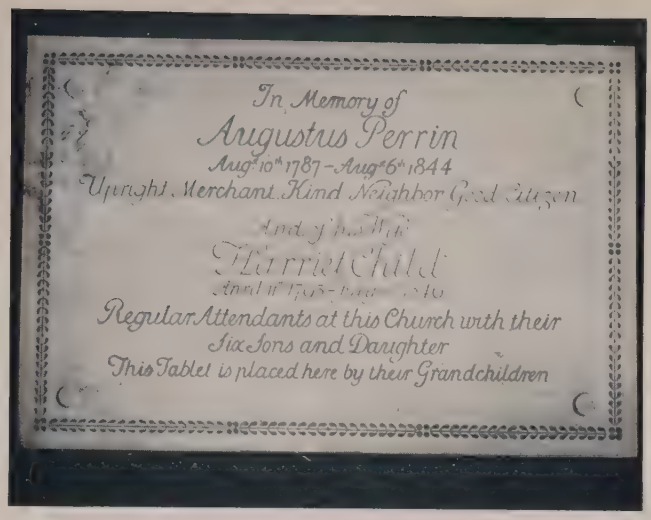
Brick lettering on white marble
Christ Church, Philadelphia, Pa.



Wren Chapel, College of William and Mary, Williamsburg, Va.
Perry, Shaw & Hepburn

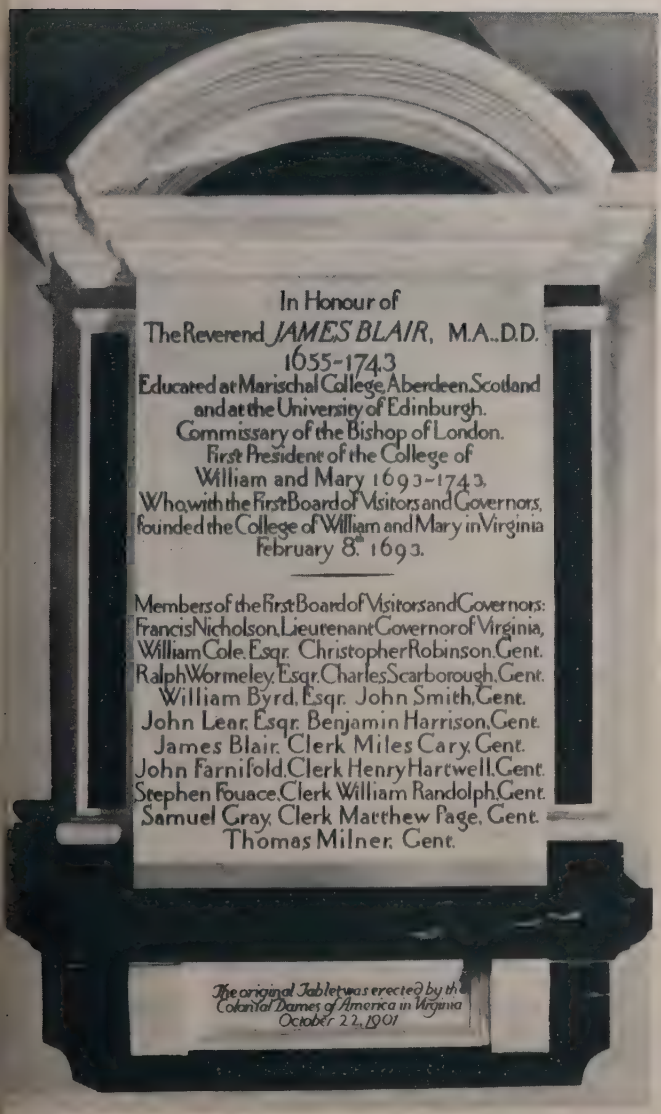


General Bronze Corporation



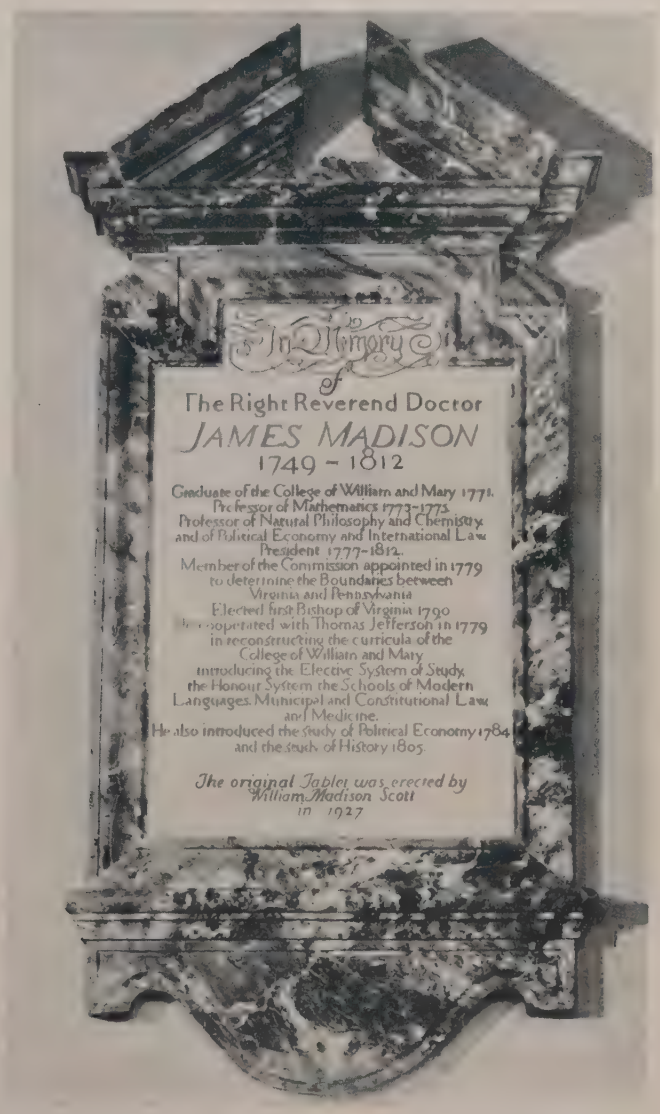
White marble; incised letters and border in red

T. B. Hapgood



Wren Chapel, College of William and Mary, Williamsburg, Va.

Perry, Shaw & Hepburn



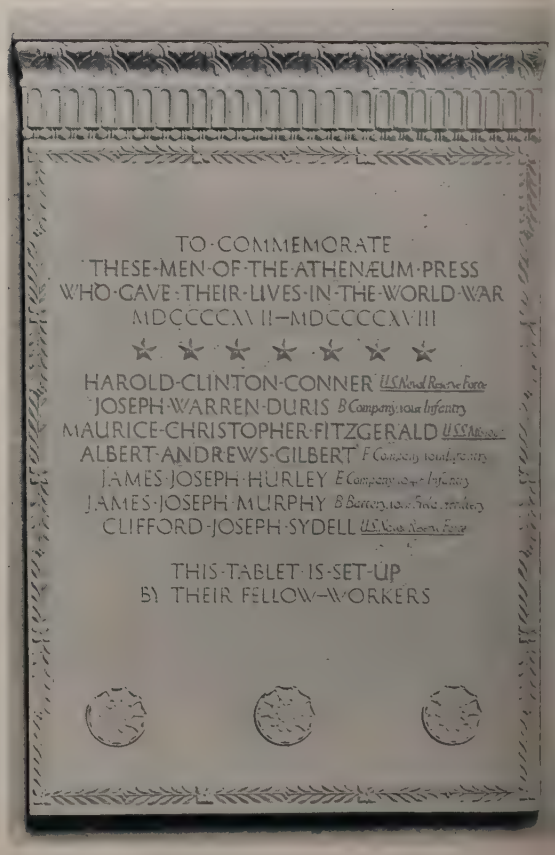
Wren Chapel, College of William and Mary, Williamsburg, Va.

Perry, Shaw & Hepburn

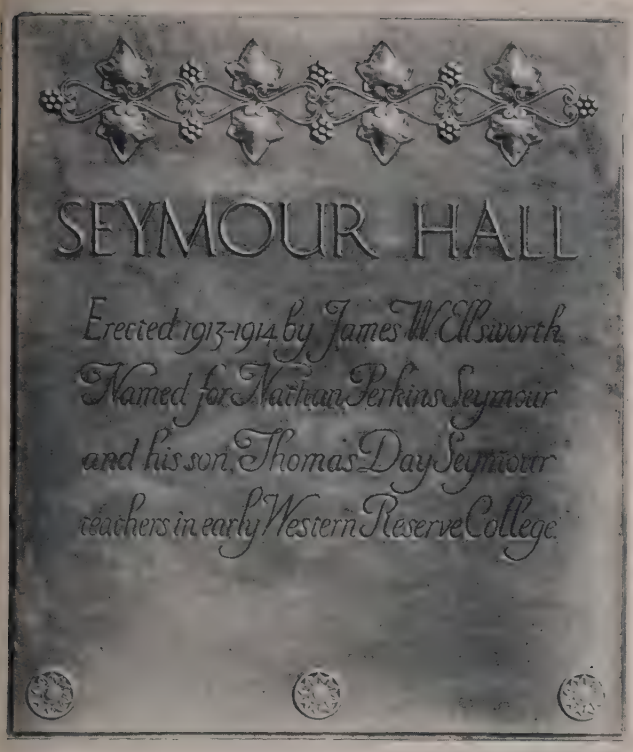
The Brick Presbyterian Church
New York, N. Y.

Western Reserve University, Cleveland, O.
T. B. Hapgood

General Bronze Corporation

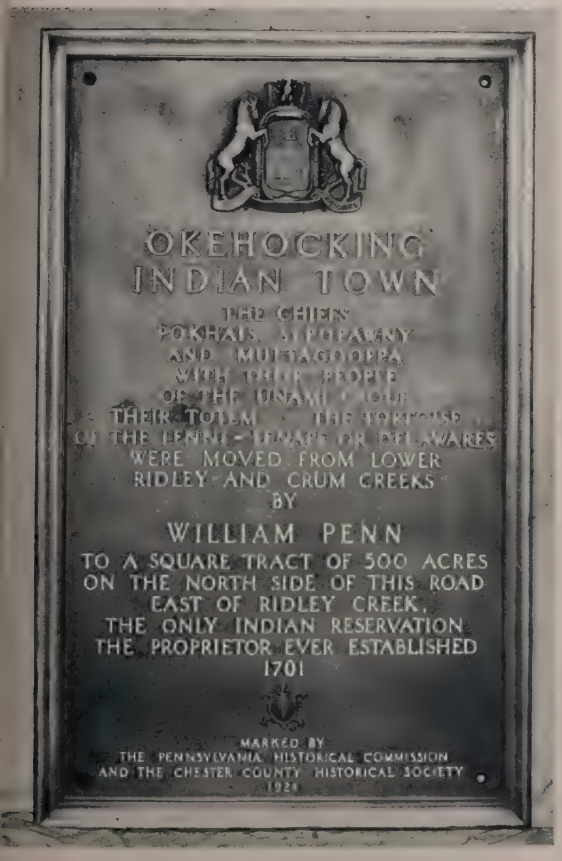


Plaster model
T. B. Hapgood



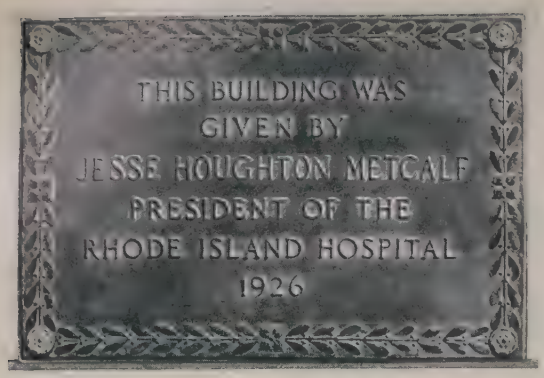
Western Reserve University, Cleveland, O.
T. B. Hapgood

Chapel of All Saints, Trinity Church, New York, N. Y.
Thomas Nash



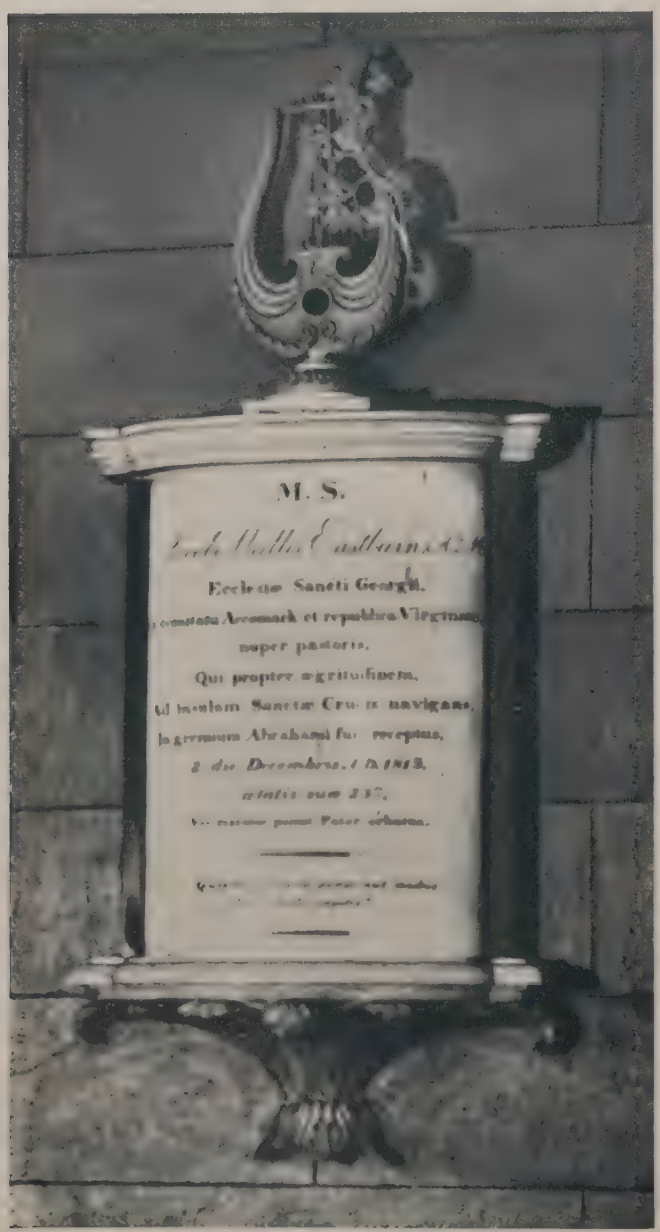
Bronze countersunk in marble
Paul P. Cret

General Bronze Corporation



The Gorham Company

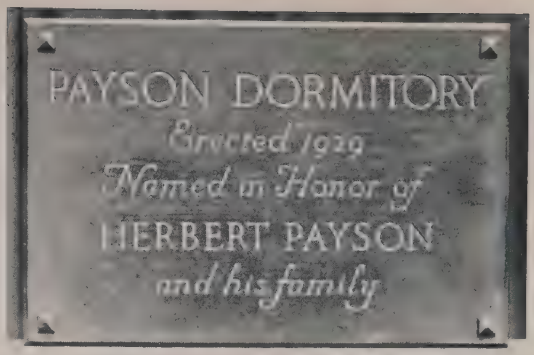
Christ Church, Andover, Mass.
Frank Chouteau Brown



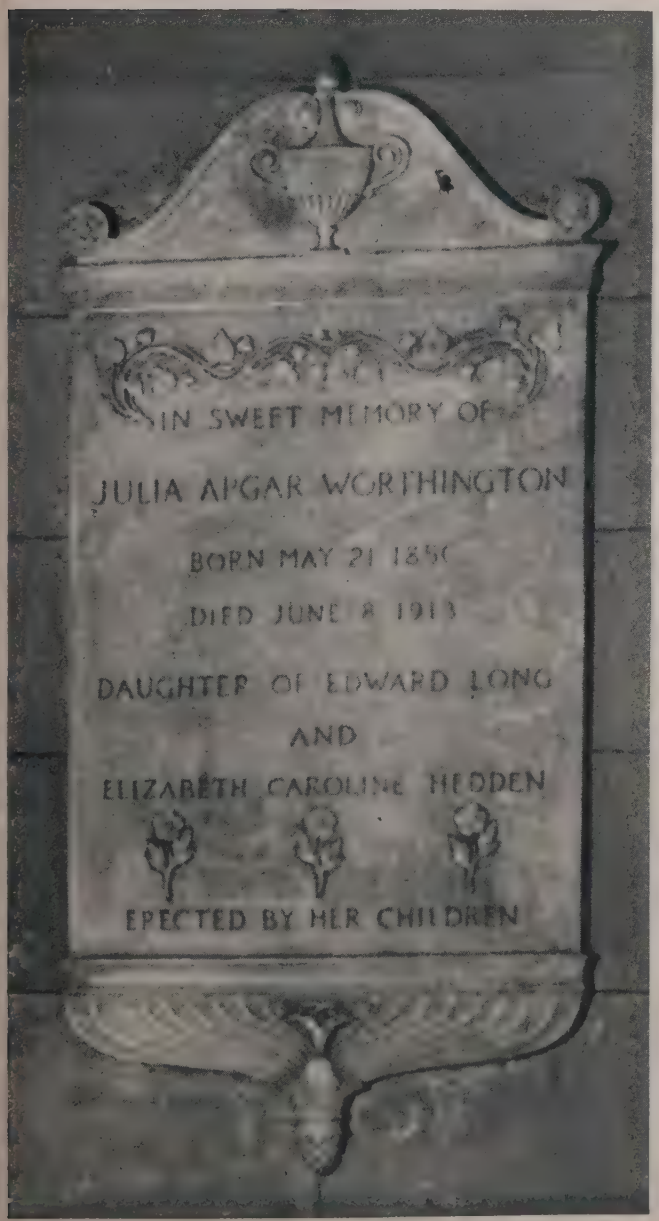
Church of the Ascension
New York, N. Y.

Church of the Ascension, New York, N. Y.
McKim, Mead & White

Black lettering on white marble
St. Peter's Church, Philadelphia, Pa.

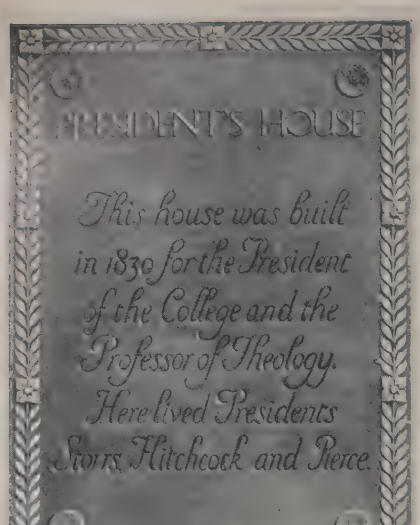


The Gorham Company

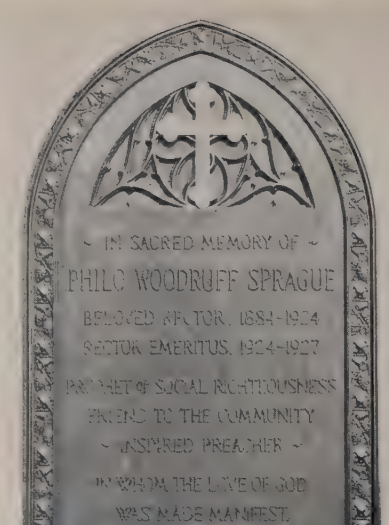


Church of the Ascension
New York, N. Y.

Church of the Ascension, New York, N. Y.
Percy Griffin

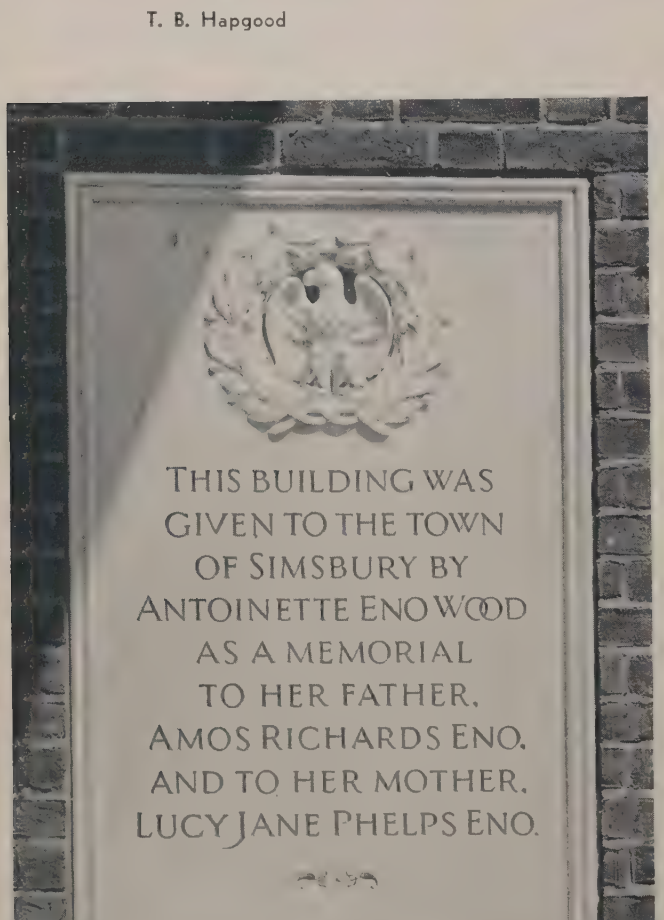


Western Reserve University, Cleveland, O.
T. B. Hapgood



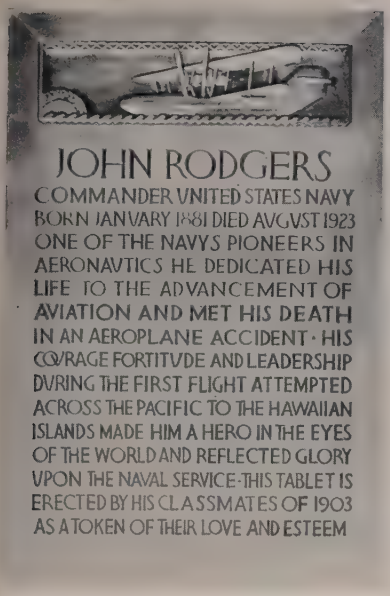
Charles J. Walsh

The Gorham Company



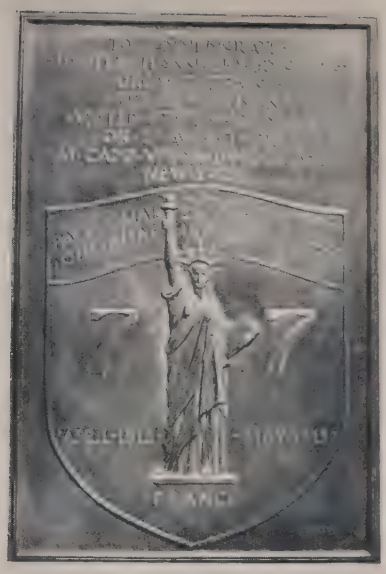
Marble countersunk in brick
Smith & Bassett

White marble against slate
St. Peter's Church, Philadelphia, Pa.



General Bronze Corporation

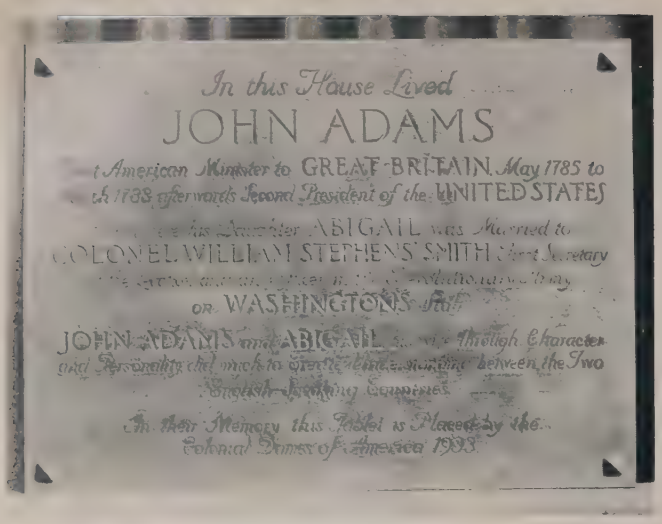
Marble countersunk in ledge stone
Charles S. Keefe



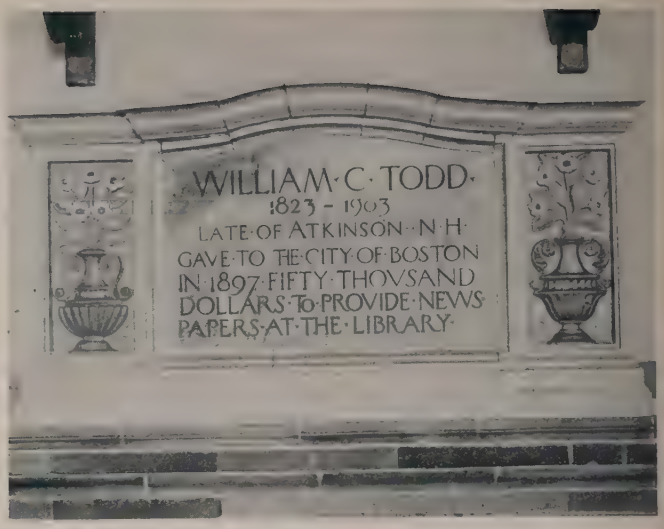
Robert Aitken

Black, red and white marble
Christ Church, Philadelphia, Pa.

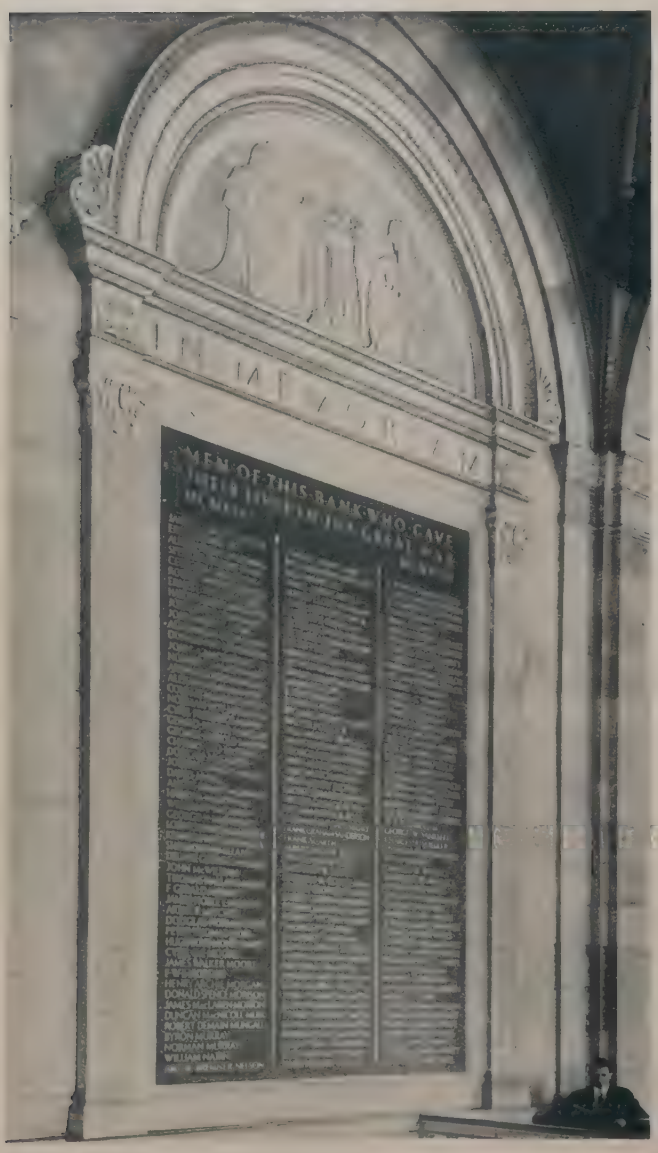
Chapel, Hotchkiss School, Lakeville, Conn.
· Delano & Aldrich



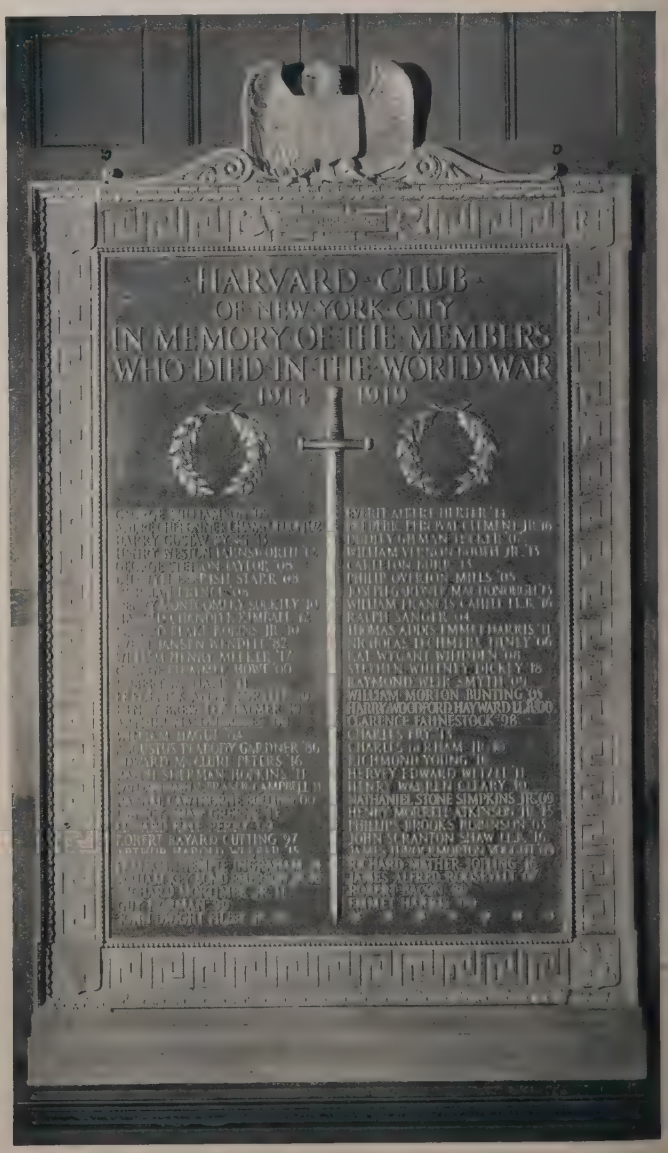
The Gorham Company



Frank Chouteau Brown

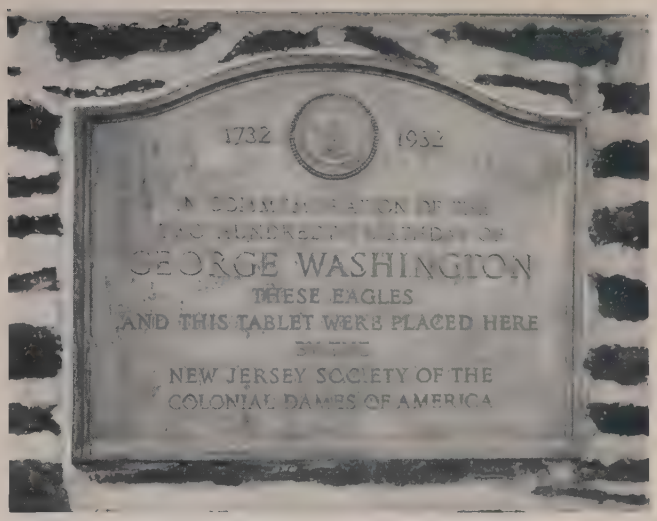


Royal Bank of Canada, Montreal, Canada
York & Sawyer; S. G. Davenport

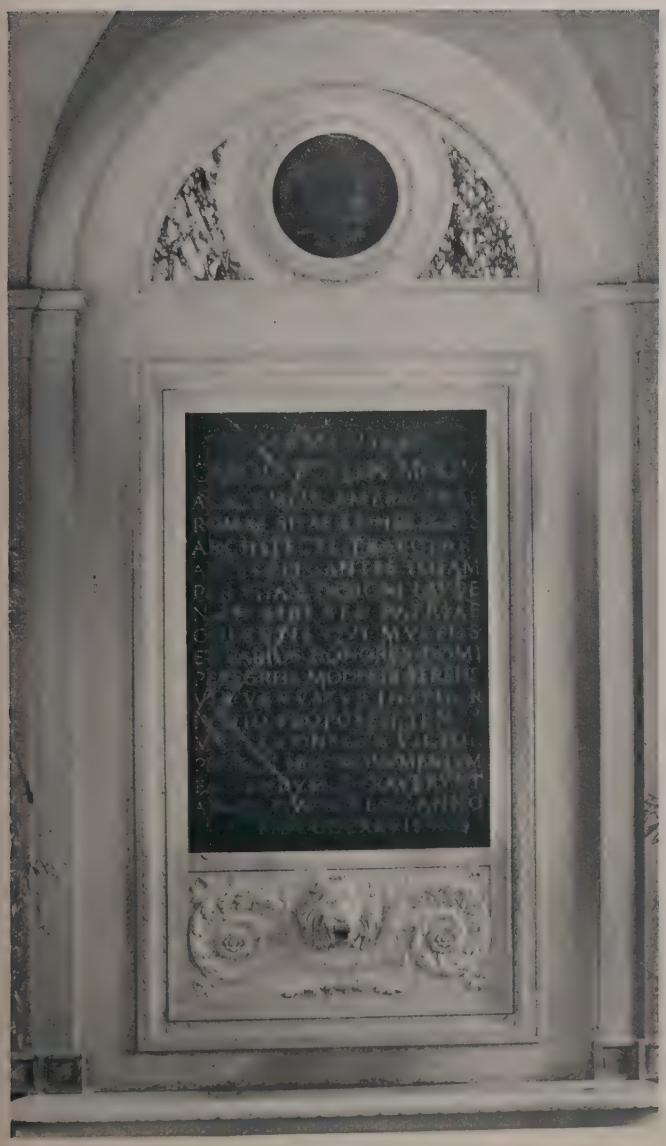


McKim, Mead & White

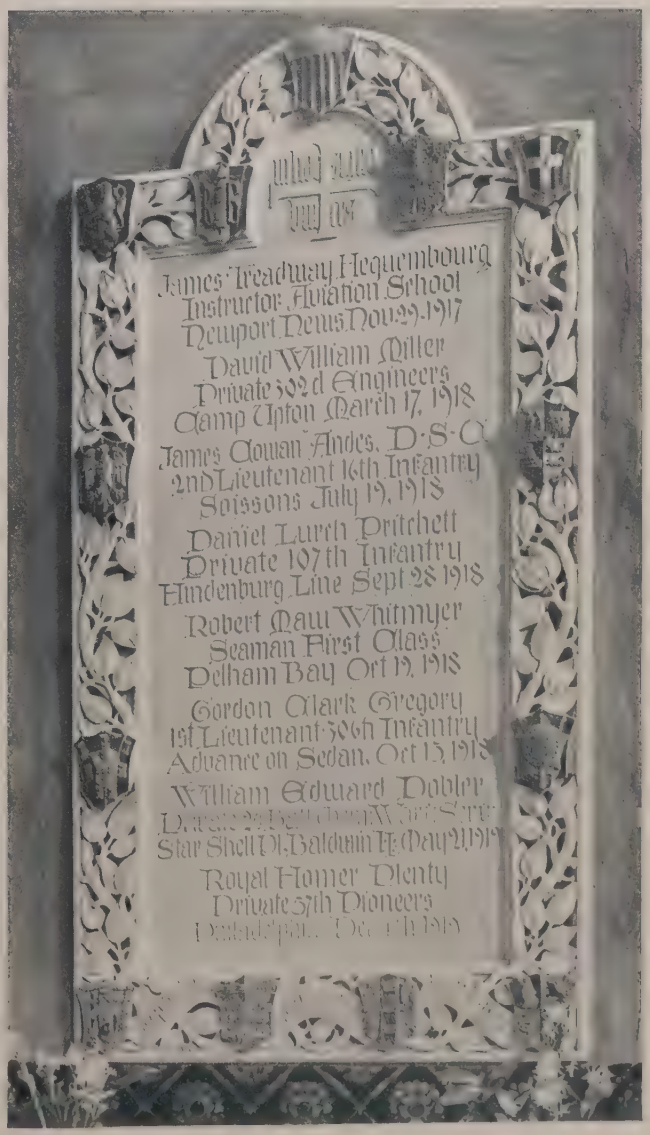
Julio Kilenyi



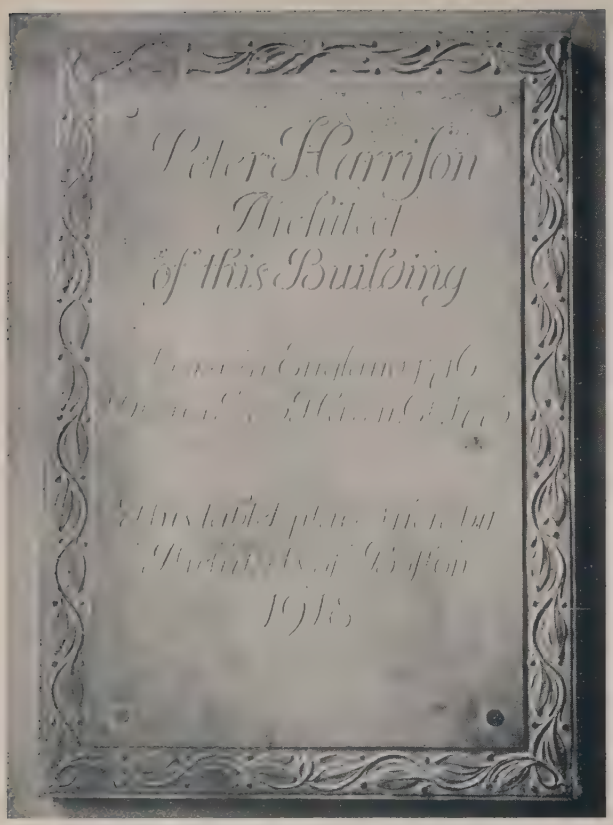
Bronze on ledge stone
Walter B. Chambers



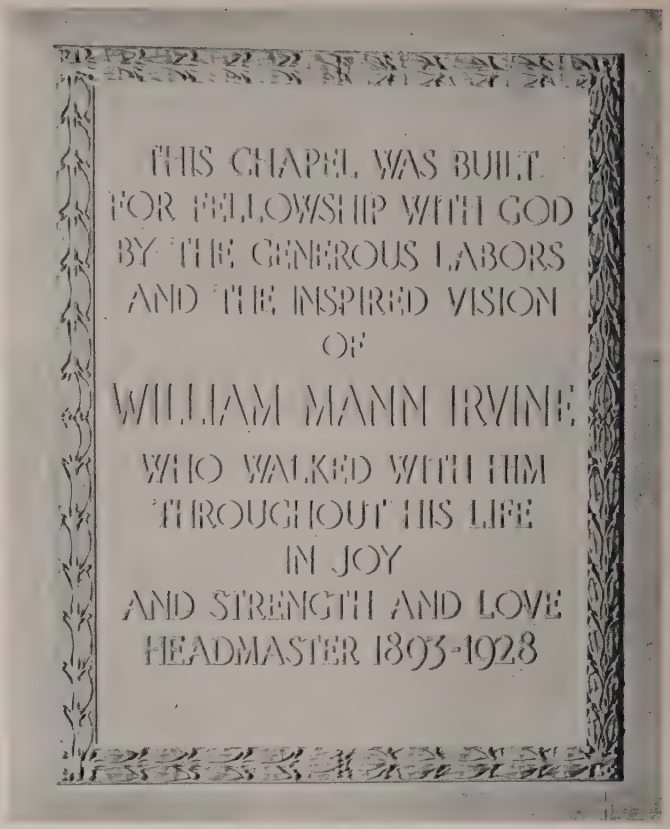
American Academy in Rome
McKim, Mead & White



Chapel of the Intercession, New York, N. Y.
Mayers, Murray & Phillip

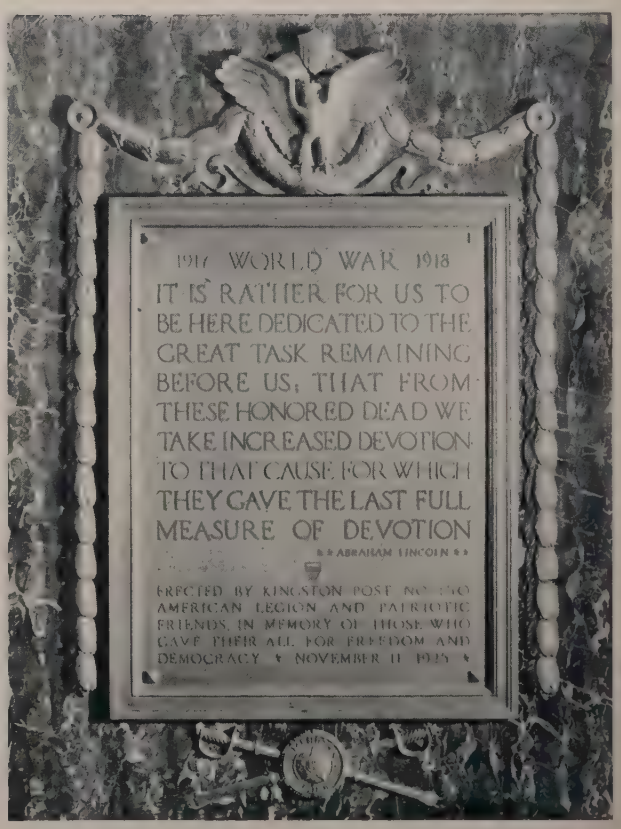


Kings Chapel, Boston, Mass.
T. B. Hapgood



Mercersburg Academy, Mercersburg, Pa.
Cram & Ferguson

Wren Chapel, College of William and Mary, Williamsburg, Va.
Perry, Shaw & Hepburn



Bronze on black and gold marble
Charles S. Keefe

The cartoon of D. W. Powers, Rochester tycoon, that cost Claude Bragdon his job

PHOTO BY MARY DALE CLARK

Warner Building, damper to any draftsman's dreams, by Bragdon's first boss

SALVAGED FROM TIME

Extracts from the Autobiography of

CLAUDE BRAGDON

MY architectural apprenticeship began at the age of sixteen, in Oswego, New York. Here there was only one architect. His name was A. J. Hopkins, a sandy-haired, watery-eyed man, with a somewhat swollen sense of his own importance. Clients were scarce, and he eked out his meagre income by doing odd jobs of various sorts involving mechanical draftsmanship, the most remunerative being those maps of places, plans of houses, et cetera—"Exhibits A, B, and C"—used in court proceedings to inform the jury of the physical aspects of the matter in hand. He got well paid for this work, and it was important to have his diagrams look worth the money; therefore he adorned them with elaborate titles of fancy lettering, done in colored inks. This was tedious and difficult work of a sort at which he was not proficient, so when he happened to see an example of my skill he hired me to work for him after school hours. My first job was lettering the plan of a farm kitchen in which a horrible murder had been committed, designating every bloodstain, and the stick of wood with matted hair on it, found underneath the stove.

Such was the rather ominous beginning of my career as draftsman and architect; but if it were a warning I did not heed it, and as an omen of evil fortune the prediction signally failed to come true.

In 1886 my parents moved to Rochester, New York, and there I entered the architectural office of L. P. Rogers as an apprentice at a salary of nothing a year. He was a great goat-like man with grandiose ideas. These found their architectural expression in façades of red pressed brick and gray cast iron in which the classic orders, handled without respect and without mercy, were arrayed against one another. The Warner Building, on North St. Paul Street, which housed the business of the then famous Warner's Safe Cure, was the supreme example of his art. Since the windows of his office, in an old stone house a little farther up the street, commanded a fine view of this edifice, its image still remains extraordinarily clear.

There were two others in the office with me, one an apprentice like myself and the other a paid draftsman. Business was bad and Rogers made his appearance only occasionally, being immersed in other affairs of a mysterious nature. Thus, left largely to our own devices, we loafed, read, played cards, and looked out of the window, particularly on gusty days when the cross-winds played havoc with the women's skirts. Like most young men we were more or less lascivious-minded, but I

Harvey Ellis, one of the master draftsmen of the Nineties, and a characteristic representation of his work in pen-and-ink outline with superimposed color somewhat in the Japanese manner

was still an innocent, of Puritan upbringing, and could neither accustom my tongue to obscene talk nor reconcile my ears to the sound of it.

I cannot count the year spent in this office as anything but wasted: I learned nothing of value in my profession, and a great deal of no value regarding matters with which I had no concern. It ended in my feeling a dislike for architects, as represented by Rogers, and a distaste for architecture as represented by the Warner Building. I wanted to be in the stream of life instead of in this slack backwater; I wanted to make money, and to "Leave my stamp upon the age."

I was ready for a change of some sort, and after an interval of waiting the opportunity came. I was offered a job as a cartoonist on a projected local comic paper at a salary of fifteen dollars a week. Confident of making good and dazzled at the prospect, I accepted, the understanding being that I was to contribute one major cartoon a week. I succeeded so well that I worked myself out of a job in short order. It happened in the following way:

At that time Rochester's most prominent citizen was D. W. Powers, owner of Powers Block, the mansard of which housed the celebrated Powers Art Gallery, where for an admittance fee of twenty-five cents one could view many bad and mediocre pictures along with a few good ones. But Mr. Powers' pride in his collection was immense. The third cartoon I made for *Jury* was directed at the quality of his connoisseurship. It so happened that the Great Atlantic and Pacific Tea Company was giving away a colored lithograph with every purchase, and I represented Mr. Powers coming out of the store door with a pound of tea in one hand and under his arm a picture. "Now I'm Grandmamma," of a little girl putting on a pair of spectacles. Underneath the cartoon was the legend: "Mr. P——rs' latest acquisition."

When this made its appearance Powers was furious and threatened reprisals. To placate him I was discharged. This taught me the truth of what the Autocrat of the Breakfast Table said, that one should never be as funny as one can. It disgusted me with my new profession even more than I had been disgusted with my old one, so I accepted a position with Putnam and Block, architects, at a salary of five dollars a week.

I had not been working for them long when I was offered double this amount and the position of head-draftsman in the office of Charles Ellis. Though I knew that I was deficient in experience the opportunity seemed too good to let pass, so I accepted, but with an inward fear that I would be betrayed by my own incompetence. I soon found, however, that my new employer was as incompetent as I. His talent lay in getting commissions, and as soon as he had landed one he would turn it over to his draftsman to execute while he went out to capture another. Having just landed a big factory for the Stein-Bloch Company, he now expected me to carry the building through. I realized that my whole future might depend upon my success in this, and resolved not to fail at any cost. I was a sufficiently good planner and designer, but was deficient in knowledge of construction. Fortunately, one of the contractors chosen to do the work, a skilled engineer, seeing the plight I was in, solved all my structural problems for me. As a result I came triumphantly throug this ordeal. My assiduity won me n only the confidence, but the friendsh of Nathan Stein, the Company's hea and founder, so that when I went in practice on my own account he was o of my first clients.

I have often noted that when o earnestly desires to do a thing whic seems beyond his power to achieve u aided, help is forthcoming. As it wa with my first important building, so was also with my first theatrical pr duction. I knew nothing of the tec nique of costuming, lighting, scer building and scene painting, but at ever crisis where I needed help, I got i Something in my atittude of min seemed to attract just the right perso to me. When faith is reënforced b faithfulness, prayers are answered.

At about this time I suffered a di appointment in love. I sought and foun relief from my unhappiness in wor But the daily routine failed to satis me; I needed new and more imagina tive outlets. In those days if one wante to become an architect he studied at th *Ecole des Beaux Arts* in Paris—pr vided he could afford it—or he wen into some architect's office and learne his profession there. The man I worke for could teach me nothing, but ther was a third educational alternative. Th Architectural League of New York an the T-Square Club of Chicago he annual competition open to all draft men; the architectural magazines ofte held contests of a similar sort, and i the larger cities there were architectu al associations the purpose of which wa educational as well as social. Such wa the Rochester Architectural Sketc Club, which I helped to organize. entered into these activities with gust and spent most of my free time work ing on imaginary *projects* in friendl rivalry with clever draftsmen every where. Whatever skill I may have a a designer I attribute largely to th training. I won the President's Med of the Architectural League on thre separate occasions, and my success i one of these competitions brought m good fortune of another sort, as I sha tell. But first I must speak of Harve Ellis, the personal influence most pote at this period of my life.

This began before I ever saw hin for he was the brother, and had bee the partner, of Charles Ellis, for whom I worked. The office was full of Har vey's drawings, which moved me to ad miration, emulation and despair, becaus he was one of the finest pen-and-in artists this country has produced. Hav ing heard that Lafe Heidell had

nude" in his barroom, done by Har-
ey in discharge of a debt, I paid the
ace a visit, and found that he was no
ss accomplished as a painter. The pic-
re represented two white-bodied
mphs stretched out on the sea beach,
ne of them engaged in tracing with a
ointed shell on the wet sand "A Let-
r to Neptune." It was charming! I
eard so many tales about the man as
rtist, wit, raconteur, barroom idol
nd man-about-town that I longed to
eet him.

This desire was at last gratified, and
e became friends. After a brilliant
reer as architectural designer in
hicago, St. Louis, and Minneapolis
fices, Harvey returned to Rochester—
ot triumphantly, but "like a spent
vimmer, crept desperately ashore." As
the case of so many men of similar
lents and temperament, drink had been
s undoing. He had given it up but it
d done its work and left its mark. Not-
ithstanding this, he could be funny
out it on occasion: I complimented
m on how well he was looking, and
e answered: "Yes, but you forget that
was preserved in alcohol for twenty
ears!"

Harvey was slightly under medium
eight but of erect and soldierly car-
age—for he had been educated at West
oint. His clear, thoughtful, gray-blue
es looked out from underneath a deli-
te, high, white forehead; a drooping
oustache concealed a sensuous mouth
t in a somewhat heavy jaw. Thus
s dual nature, the embodied intel-
gence and the amiable epicurean
uched with animalism, found expres-
on in his face. His hands were small
nd exquisitely shaped, the forefinger
the right hand stained yellow by
garettes, and the thumb phalange too
ort for one who would leave his stamp
on his age. He was at all times very
uch the gentleman; there was a certain
iet dignity about him, and I think it
ver was more present than in the
owded public ward of that Syracuse
spital where I took final leave of him.

Harvey seldom sold a picture, because
anyone expressed a liking for one of
em he was so pleased that he made
at person a present of it. Toward the
d of his stay in Rochester he lived
r the most part on the bounty of his
iends, of whom he had many. When
ustav Stickney of Syracuse, the furni-
re maker, and publisher of *The Crafts-
n*, offered Harvey a job in that city,
made a final clean-up by represent-
g to every one of his friends that he
d not enough money to take him
ere. In an uncongenial environment,
d bound to routine tasks far below his

Bruce Price, from painting by Harper Pennington, and Bragdon's pen drawing of the Southern mansion in which Price was born—a drawing made for Scribner's with the guidance of a faded photograph

talent, he took to drinking again, and became ill in consequence. Though his friends rallied to his aid at the very end, the attending circumstances of his death were sordid and distressing.

My formal education was of the scantiest, but I have had the inestimable privilege of being inspired and instructed in the arts I practised by two great masters of them: Harvey Ellis and Louis Sullivan. Both paid the penalty of being ahead of the time they lived in; both sought the false solace of drink, died poor, and were more or less neglected. Although Ellis left less to justify his title to greatness than did Sullivan, he exercised an influence in his own chosen field not less potent: The strong-nerved young draftsmen of the Middle West used to nick the edges of their T-squares in the effort to reproduce Harvey's crinkled pen line—the product, did they but know it, of nerves unstrung. Artists of greater eminence pored over his water-colors trying to discover by what means he imparted to them the depth and richness of a Persian rug. He was one of the pioneers in that so-called "charcoal school" of water-color painters who, following the method of the Japanese print-makers, develop their design in bold outline, then establish their *notan*—values in dark and light—superimposing their color upon that.

Many are the things which Harvey Ellis taught me: that a picture, like a growing plant, should look finished at any stage of its progress; that hiding behind every color is its complementary, like a child behind its mother's skirts, and can be made to show itself; that symmetry is death, but balance—livingness; that "chairs were made for people to sit in," and that "one should go sketching with his hands in his pockets."

After Charles Ellis had failed to pay me my salary for several weeks on end, I left his employ and began to cast about elsewhere. I was by then an excellent pen-and-ink renderer of architectural subjects, and it occurred to me that I might use this talent in the field of magazine illustration. I was encouraged in this belief by my friend Henry Milford Steele, at that time assistant art editor of *Scribner's Magazine*. Accordingly, with all the money I had in the world, which was thirty dollars, I went to New York to seek my fortune.

On my arrival in New York I took a little inside room at the Grand Union Hotel, opposite the New York Central Station, and lost no time in calling upon Steele, who introduced me to his chief. This gentleman, whose name I fail to remember, was affable but vague. He said that sometime he might have something for me, and asked to see an example of my work in pen and ink. Incredible as it may seem, I had nothing to show him, but I promised to bring him what he asked for on the following day. So I bought a sheet of bristol-board and a bottle of black ink, retired to my cubicle and set to work. My only source of light was a flickering gas jet, my drawing-board was the marble top of a cold steam radiator; I had to work in an overcoat to keep from freezing, and my fingers were so stiff that they could scarcely hold the pen. Nevertheless I achieved a fairly good pen-and-ink rendering of a photograph; at any rate it satisfied the editor, for he assured me that he would send for me as soon as he had need of the kind of thing I could do best.

This was not failure, but neither was it success. I saw that I must get some

Stanford White, idol of New York's end of the century draftsmen and his famous Tower of Madison Square Garden —from a drawing made later by Mr. Bragdon

kind of work if I were to remain in New York. Architectural draftsmanship was my only marketable talent, so I spent the following few days going from office to office in search of a job. Sometimes I was received politely, sometimes rudely, but always with the negative answer and hastily turned back. For the first time in my life I encountered the Great Indifference, and experienced its icy chill.

To make my money last longer I went hungry much of the time, and I allowed myself no pleasures other than that of hovering over one of the great coal fires in the hotel lobby and watching the people come and go. By Saturday morning I had only enough money left to keep me over the week-end and to buy a ticket back to Rochester: I definitely had to face the prospect of a retreat. I started out that morning, therefore, with the realization that this was my last day of grace.

I went first to the office of Bruce Price, an architect whose work I knew and liked. I was not permitted to see him, of course—I had grown used to that—but his head draftsman appeared at the little aperture just long enough to tell me brusquely that he was not taking on any new men at that time. At that moment a tall, distinguished-looking gray-haired man whom I knew to be Price came from an inner office, and as he passed the window on his way out glanced at the card I had thrown down. At the sight of my name he stopped, eyed me sharply, and asked me if I were the man to whom The Architectural League had awarded its silver medal. Assured that such was the case, he said: "Your design was the best. I was one of the judges of that competition and would have given you the gold medal had not the others voted me down. You're just the man I'm looking for. Come in on Monday and work for me; I'll pay you twenty-five dollars a week."

I had been in Price's employ for about a month when the art editor of *Scribner's* sent for me and set me the task of making a pen-and-ink rendering from a faded photograph of a fine old southern mansion. It was just the sort of thing which I could do best and I made a good job of it. One day Price came to me with a copy of the magazine in his hand open at the page containing the reproduction of my drawing. It was one of the illustrations of an article written by him. "That's a picture of the house where I was born," he said, "It's a beautiful drawing; I wonder who made it." There was a deepening of our mutual liking when I told him that the drawing was mine.

I had taken a large rear room in a "brownstone front" on West Thirty-eighth Street, presided over by a big red-headed Irishwoman, the wife of a Hudson River steamboat engineer. I was often lulled to sleep by the faintly heard music from the near-by Metropolitan Opera House. My rent was four dollars and a half a week; ten dollars went to my mother, and I lived on what was left. Being fastidious about food, service, and surroundings, I went without a mid-day lunch for the sake of enjoying a good dinner at an expensive restaurant in the evening. In order to forget my hunger I used to spend the noon hour watching the construction of the Madison Square Garden, distant only a short walk from Price's office, eastward along thronged Twenty-third Street, past the white portal of the Fifth Avenue Hotel, and diagonally across the great green, friendly Square.

On these excursions I used sometimes to encounter Stanford White, identifiable by his great stature, his walrus moustache, and his upright carroty hair. The Madison Square Garden was not only the supreme expression of his architectural talent, but it was a sort of compendium of his tastes as well, embracing as it did a great arena, a theatre, a restaurant, a roof-garden and an apartment house. His tower room was the scene of that alleged seduction which led to his murder by Harry K. Thaw. This occurred on the Garden roof, amid a crowd of pleasure-seekers. From a newspaper man's point of view it was perhaps the most sensational event which ever happened in New York. How fortunate that we do not know what the future holds for us! Had White known that he was building the stage-setting for his own life's tragedy, how could he have had the courage to carry to completion what was certainly one of the most admirable buildings of modern times?

(To be continued)

NSULATION

WHAT WE KNOW AND OUGHT TO KNOW ABOUT IT

y TYLER STEWART ROGERS
rector of Technical Service

HERE is no longer any question in the minds of architects and engineers of the economic value of insulation modern heated or air conditioned buildings. In a decade e building world has become "insulation conscious." Insuting materials, and such collateral heat-transfer-reducing deces as multiple glazing, weatherstripping and entrance infilation barriers, have become staple products rather than spealties; they are prerequisites of sound modern construction. No doubt this position is due largely to their economic orth. Almost any type of insulation now in commercial roduction and general use can pay its own way in buildgs. That is, its cost will be offset largely by initial econnies in the size and cost of heating and cooling equipent, and any difference that may remain will be paid off a relatively short period of time by fuel and operating conomies that result directly from the diminished heat flow. can be truly said, in residential work at least, that no ollar invested in a building pays such handsome dividends the dollar spent for insulation.

RESENT KNOWLEDGE

Condensed for easy reference in the accompanying three IME-SAVER STANDARDS sheets are all facts essenal to the architect or engineer for determining the influence insulation, weatherstripping, multiple glazing and entrance oor types on the heat loss or gain of any building structre, excepting only the influence of solar heat.

The first sheet "How to Find Heat Transmission of Buildg Sections" gives standard rules and data for calculating ne overall coefficient of transmission of any combination of uilding materials.

The second, entitled "Heat Transmission through Buildg Sections with Per Cent of Heat Transfer Stopped by nsulation" presents a comparative study of the effect prouced by different quantities and different types of insulaon when employed as indicated in ten representative wall, oor, ceiling and roof sections. This sheet is primarily a uide to the selection of materials by type and quantity, for gives both the coefficient of heat transmission and the per ent of heat transfer stopped by the selected insulation. Obiously ten sections are insufficient in number to meet all ractical needs; but the relative value of lesser or greater uantities of any given insulation or the relative effectiveness f different types may be seen at a glance, so that attention an be turned to such other vital matters as cost, ease of nstallation, durability and performance of the kinds tentavely chosen.

The third sheet, "Heat Transmission and Infiltration through Doors, Windows and Glass Masonry" covers the collateral subjects of multiple glazing, weatherstripping and entrance infiltration. New information, never before presented to the architectural profession, appears here. A tentative value is given for the transmission of hollow glass masonry units; tentative because of wide variations in test data and lack of a sufficient number of tests to confirm the average value shown. Tables showing entrance infiltration under summer and winter conditions through entrances fitted with swinging doors, vestibules and revolving doors, offer much needed new data. See the following article by the author of these tables, Arthur M. Simpson, for a clear and instructive explanation of their significance.

Except where otherwise noted, all of the basic reference data in these TIME-SAVER STANDARDS are derived from the American Society of Heating & Ventilating Engineers Guide, 1936. This is recognized as the primary source of engineering data used generally by heating, ventilating and air conditioning engineers and equipment manufacturers. Purposely conservative, and for this very reason often subject to controversy over the admission of new data, the Guide figures have generally proved satisfactory in field practice and may, therefore, be used with confidence.

KNOWLEDGE NEEDED

It is, nevertheless, true that what is known today about insulation, and particularly about insulation technique in field practice, is inadequate and must rapidly be expanded. Some of the things now subject to research, or about to be given extended study, are worth reviewing in order to see, in advance perspective, what improvements may be anticipated.

There are only four basic types of insulation, rigid, semi-rigid or blanket and fill types of what may be termed mass insulations and reflective types. In each category, however, there are from a half dozen to a half hundred different kinds of manufactured products, each made by from one to several hundred different companies. It is said there are well over two hundred producers of rock wool or its equivalent. Inevitably there is a certain amount of confusion in the minds of buyers between the merits of these different types and brands in consequence of the keen competition between so many interests for each insulation dollar.

What architects need, obviously, is more knowledge than now exists as to the proper choice between types (if not brands) for any given condition encountered in building practice. It must be clear that not all materials are equally suited to all conditions, cost included. No one material can

properly claim universality in use or even a predominance of advantages under average conditions. Each one has its merits and its limitations. The industry is too young, perhaps, to have learned that architects place greater faith in a material when they know its limitations than they do in any product for which only advantages are presented. So for the present at least, the profession must rely upon its own best judgment until the accumulation of experience tends to settle each type of insulation into its proper place in the building picture.

We need, too, more precise knowledge about installation technique. It has already become obvious that honest craftsmanship is as essential to satisfactory performance as inherent quality of material. Practically all reputable manufacturers have formulated standards of good practice in the use of their materials, but only a few of them have done enough to disseminate this information broadly among architects and contractors alike. Some extremely unsound practices have developed among low-grade speculative builders and contractors, particularly in the improper use of fill and rigid insulations or in substituting less thicknesses than the amounts claimed, and in the misplacement of reflective materials. These abuses, deliberate or made through ignorance, are cheating the public. Architects can do much to establish proper techniques, first by demanding of manufacturers adequate installation instructions under all conditions encountered in use, and second by insisting that these practices be followed faithfully through proper specifications and rigid supervision.

It is time for us to gain more knowledge about the final behavior of building insulation materials after installation. Up to the present, most of our knowledge of transmission values has been derived from laboratory tests that bear no relation to field conditions.

All insulation materials are rated on their transmission as determined by "hot box" or "hot plate" tests on bone dry samples about one foot square. The very nature of the test eliminates variables due to moisture content. Yet we know that materials used in construction are constantly exposed to air-borne moisture, and cannot remain bone dry in use. These tests also fail to recognize the effect of wood or metal or masonry framing members which may extend from the cold side to the warm side of the building section. Wood has low conduction, metals and masonry have high conduction. It is ridiculous to believe that the overall transmission of a wood framed wall is identical with that of one using steel to separate and support the inner and outer surfaces. There must also be some difference in performance between materials placed over the framing members and those placed in between.

While these considerations are utterly neglected in present methods of rating insulations, it is impossible to say how much significance would attach to more precise knowledge. For the present, it is comforting to realize that calculated heat losses or gains work out quite closely in actual practice. Hence our empirical knowledge is at least keeping us out of trouble. But with the steady advancement in building arts, and the need for facts that may lead to further economies in construction, it seems very important to have a careful check between laboratory values and those encountered in building service.

Architects ought to know how much insulation is enough. Ordinary wood stud construction with wood sheathing and siding on the exterior and metal lath and plaster within transmits .26 Btu per hour per degree F difference in temperature. For many years, until fuel costs mounted and operating costs became subject to scrutiny, this construction proved quite satisfactory. Then we learned that insulation would reduce heating costs sufficiently to pay for the added materials, and dividends would be earned in increased comfort as well as in cash. But how far should we reduce this overall transmission in different sections of the country? Would a value of .08 or .10 represent de luxe practice for severe climates? Should we say that .15 to .2 is minimum good practice? It is possible to find the answer for each specific project by a series of calculations, including transmission values, insulation costs and fuel and operating costs. But this is too tedious for most architects to undertake. Some guiding figures, developed without bias would help materially. For the law of diminishing returns makes it possible to over insulate as well as to under insulate.

The advent of air conditioning is opening up still another field for constructive research. Technicians know that when indoor relative humidities are artificially controlled (as they should be for comfort and health) there is a theoretical dew point temperature somewhere within the exposed walls or roof at which point air-borne moisture is condensed into water. This occurs, of course, only under certain climatic conditions. It is also known that infiltration through some kinds of construction is very high (as much as 7.85 cubic feet per square foot per hour through an 8½" brick wall exposed to a wind velocity of 15 mph) but that it is reduced to negligible quantities by plastering or by the use of a stout building paper. It is further known that vapor pressures tend to move this internal moisture toward the cold side of the wall.

These facts set up a number of speculations that cannot be answered without further research. It seems important to know how much air-borne moisture permeates building sections of different types. For if any type admits large quantities, sufficient dampness might collect to cause damage to the structure or temporarily to impair the value of the insulation. This question might arise with some of the newer experimental assemblies, such as are being tried in prefabricated and "dry" constructions. It would appear also that plaster, building paper or any other impervious curtain on the warm side might be a sufficient barrier to prevent any measurable accumulation of dampness.

Many of these questions are purely academic today. Nevertheless leading manufacturers and such organizations as the American Society of Heating & Ventilating Engineers are awake to the importance of greater knowledge. Much research is being undertaken, more is planned for 1937. Problems relating to the heat capacity of materials (that contributes to "lag" in cooling calculations) and to solar heat on buildings and glass are included. Progress is being made.

It may confidently be expected that this new phase of building science will soon become as well established and as familiar as carpentry, masonry and steel work. Standardized practices are the objective. AMERICAN ARCHITECT AND ARCHITECTURE, having placed present knowledge of insulation practice before the profession in the accompanying article and TIME-SAVER STANDARDS, will report further advances as they reach the stage of practical application.

NEW DATA ON ENTRANCE DOOR INFILTRATION WITH AIR CONDITIONING

BY ARTHUR M. SIMPSON*

ENTRANCE doors in buildings—particularly those in stores and commercial structures where traffic is continuous and often very heavy—have long been the bugaboo of heating and air conditioning engineers. They admit unwanted cold air in winter and even less desirable hot air in summer, and dust and dirt all the year around. Swinging doors equipped with strong closing mechanisms, vestibules and revolving doors have all been used in efforts to control the troublesome infiltration of air through entrances. But their use has been governed largely by guesswork, for until very recently no real data have been available. Inadequate rules-of-thumb appearing in the American Society of Heating and Ventilating Engineers Guide for 1936 attest the scarcity of information in this important field.

Inspired by commercial considerations, but directed by a competent engineer's inherent desire for reliable facts, the author of the following article, in collaboration with Kenneth B. Atkinson, Technical Advisor on Air Conditioning, University Extension Division, Rutgers University, and others, made scientific field tests on 596 entrances to buildings of many sizes and types, up and down the Atlantic seaboard and inland to Chicago. The results of these tests have been reported in scientific papers† and constitute the most accurate and comprehensive data known. They have been interpreted in this article for use by architects; the results of these tests are given in tabular form in an accompanying Time-Saver Standards sheet. The fact that the author is chief engineer of the Van Kannel Revolving Door Company and the further fact that the performance of doors working on the "air-seal" principle proves to be greatly superior to other types of entrances, has no bearing on the importance of the findings, in view of the soundness of the test procedure, using smoke puffs to reveal actual velocities of air movement.

Infiltration in summer arises from different causes than infiltration in winter. But summer cooling loads are more seriously affected by the design of entrances than winter heating. Therefore, the author presents his data in two sections; the first on summer conditions, the second, more briefly, on winter conditions. (The Editors.)

ENTRANCE INFILTRATION WITH SUMMER AIR CONDITIONING

The surest way to keep down the cost of summer air conditioning would be to lock all the doors and windows and draw necessary fresh air from a clean, cool, shady side of the building. Such air passing through the conditioning apparatus could be very easily and economically reduced to the proper temperature and humidity and it could be cleaned so that all outside dust and dirt would be excluded from the room. However, the work of the engineer and architect planning an air conditioning installation is complicated by the necessity of having doorways through which people can enter and leave the place of business. Each opening of these doors permits the passage of a large volume of air which increases the load on the air conditioning equipment.

This is not good air for ventilation; in fact, it is the worst possible air for this purpose. It has been swept over hot pavements. It is super-heated and laden with dust and dirt which are deposited on merchandise and fixtures before the air can be washed or filtered. The other air in the room has to be super-cooled to counteract the humidity and heat that this street air brings into the room. Where the doors are frequently opened in a busy entrance, this excess outside air is a useless and expensive load on the cooling equipment. Air for ventilation should enter through the apparatus in order to control it, to clean it and to assure even, undisturbed distribution throughout the entire conditioned area.

Under windy conditions entrance infiltration often exceeds all ventilation needs. If the opening of doors is depended upon for ventilation, all control is lost. In buildings with entrances facing on two or more streets and to a lesser extent in those with entrances on one street only, mere reliance on keeping the doors closed to exclude outside air fails to solve the problem, since the continual opening of the doors allows an excess flow of air. In many cities where summer wind velocities average over twelve miles per hour, the pressure differential built up across a building by the wind action produces air velocities through doorways frequently as high as five miles per hour. Particularly in buildings with entrances in two or more outside walls drafts can sweep through every time the doors are opened. Obviously, the greater the traffic and business activity, the worse the conditions thus brought about.

† "The Infiltration Problem of Multiple Entrances," by A. M. Simpson and K. B. Atkinson, A.S.H.V.E. Journal Section, Heating, Piping and Air Conditioning, June, 1936.

* Member: American Society of Mechanical Engineers; Am. Soc. of Heating and Ventilating Engineers; Am. Soc. of Refrigeration Engineers. Chief Engineer and Sales Manager, Van Kannel Revolving Door Co.

PHOTO: WEILL & STONE

The revolving door acts as an air lock. Because it h less than 20 per cent volumetric efficiency and the do rotates on an average of only 4/10ths revolution p person, it permits less infiltration than swinging do

RECENTLY DEVELOPED INFILTRATION DATA

Door infiltration in the summer cooling season is caused largely by wind pressure and the Weather Bureau records show that on the hottest days the wind velocity is usually above normal. Field tests show the direction of the prevailing wind to have small bearing on the actual direction of entrance infiltration under conditions of exposure in cities. Obstruction of air currents at the street level by surrounding buildings of varying heights causes the forces of wind velocity to be transformed into eddy currents and areas of varying pressures. These create entrance velocities in surprising directions. Even supposedly protected entrances may prove to be serious problems.

Such conditions, of course, are most apparent in stores or buildings having entrances in more than one outside wall. However, equally unexpected problems are common in such areas having entrances in only one outside wall. The theory that a single entrance building is in effect an air-tight shell with only the single doorway to act as a part through which all the air is exchanged is false. Most stores or shops have ventilating fans, rear windows, stairways or elevator shafts through which the air pressure can be relieved as fast as built up by winds blowing against the entrance doors. Of course, too, the flow can be reversed and a strong exfiltration take place. Examples of this condition can be found in almost any single entrance store where the wind is piling up a pressure in upper floors or on the blank side of the building.

COST OF OPEN DOORWAYS

A summary of field data taken in a large number of citi shows that infiltration and exfiltration velocities in buil ings having entrances in more than one outside wall w vary normally from a maximum of 350 feet per minute a minimum of 150 feet per minute, with a mean of 250 fe per minute. For single entrance buildings draft velociti will vary from 80 feet up to as high as 250 feet per minut Here the mean velocity for open door operation may b considered to be 160 feet per minute.

These figures show why it is impracticable to attempt t maintain comfortable conditions in buildings where cro drafts through opposed open doorways are possible, and wh it is costly to permit the doors of single entrance air co ditioned buildings to stand open.

With two opposed entrances remaining open and a mea infiltration velocity of 250 feet per minute, assuming a doubl doorway 5′-0″ wide by 7′-0″, the volume of infiltration exfiltration would amount to 8750 cubic feet per minut With ventilation requirements for 200 persons which woul be supplied through the apparatus credited to the infiltra tion loss, we have left a waste of 6750 cubic feet per mi ute of unconditioned air which would have to be cooled an dehumidified by contact and mixture with super-cooled an dehumidified air from the apparatus. Cooling from outsid conditions of 90° Dry Bulb and 75° Wet Bulb to 78° Dr Bulb and 65° Wet Bulb inside, this would demand an addi tional cooling capacity of 19 tons. Allowing only one o

Stop watch tests of traffic in and out of swing doors show the duration of the equivalent of full door opening lasts 2.00 seconds per person. Each person passing through permits the entrance of 166 cubic feet under normal conditions

PHOTO: GENDRAU

these entrances to remain open would save a considerable amount of load but there would still be an excess infiltration loss of over 4 tons.

In view of loads of such magnitude it is obviously impracticable even to attempt efficient or effective cooling when two or more opposite or cross draft entrances are standing open. It is further apparent that leaving single entrance doors open is a costly practice.

EFFECTIVENESS OF SWING DOORS

Unfortunately, simply keeping swing doors closed is not entirely a satisfactory solution to the infiltration problem. With a normal volume of traffic the doors remain open a very large percentage of the time and at peak capacity conditions, very closely approach the situation with open doors. Tests conducted by clocking the traffic in and out of a large number of entrances and timing the duration of equivalent full door opening with a stop watch show an average of 2.00 seconds per person passing through a single set of swing doors.

As pointed out above, tests show average draft velocities of 250 feet per minute through multiple entrance buildings having entrances on two or more streets. Assuming the area of the average swing door to be 20 sq. feet the average infiltration per person through a single set of swing doors into a store having entrances facing on another street will be 2/60 minutes draft opening per person x 20 sq. ft. x 250 feet per minute = 166 cu. ft. per person.

For single entrance buildings with a draft velocity of 160 feet per minute, the corresponding cubic feet of infiltration per person would be 100.

Cooling outside air infiltrated at such a rate makes air conditioning almost prohibitively costly. Moreover, with distribution difficulties thus brought about satisfactory results are virtually impossible. For example, with a small dollar chain store averaging 600 entrance passages per hour, at 166 cubic feet per person going in and out the drafts through the multiple opposed entrances produce an infiltration of 100,000 cubic feet of outdoor air per hour. With 12° cooling under heavy wet bulb conditions this represents a cooling load of nearly 4 tons additional refrigeration capacity. Since air conditioning costs about $300.00 a ton installed, 4 additional tons capacity represents an added cost of $1200.00.

This excessive heat gain from infiltration is the reason why reputable engineers qualify temperature and humidity guarantees where there are entrances on more than one street unless the owner undertakes to keep the doors on one side permanently closed.

EFFECTIVENESS OF VESTIBULES

The time honored answer to entrance drafts, of course, has been vestibules. However, investigation of their efficacy explains the failure of vestibuled entrances to materially assist in maintaining guaranteed conditions.

Casual observation of people passing through a vestibule gives a hint of why this device fails. With modern traffic

both inner and outer doors are open at the same time so frequently as to provide a duration of through draft opening for each person entering that is apparently little better than a single door.

Actual tests show that vestibule action is even less satisfactory than is apparent to an observer. Figures on a large number of entrances of this type show the time, during which at least one inner and one outer door are open, to average 1.5 seconds per person passing in and out. It is evident therefore, that in busy entrances a vestibule gives only 25% better protection than just a pair of swing doors. This means that the show window space or the floor area taken up by the vestibule is practically wasted.

RESULTS WITH REVOLVING DOORS

While the revolving door is an air lock and prevents drafts from sweeping through the entrance it is also a form of metering device and has been generally considered to force an exchange of air which would be greater in amount than the draft volume through a swing door entrance, except under most unfavorable conditions. While admitting the reduction of draft with heavy winds prevalent in the streets, especially where multiple entrances exist, would not this advantage be nullified by the fact that on calm days the very action of the door would enforce an infiltration not otherwise to be contended with?

Pursuing the investigation, however, laboratory tests showed surprising results. Measurements were taken to determine the actual amount of air displaced within the building by the rotation of a revolving door as each person entered the room. It was found that a revolving door, as a metering device, had less than 20% volumetric efficiency and that a revolving door rotated on an average of 4/10ths revolution for each person passing through. The faster the revolving door rotated or the more people passing through the revolving door per hour, the less infiltration there was for each person using the entrance. Table 4 in the accompanying Time-Saver Standards sheet "Heat Transmission and Infiltration through Doors, Windows and Glass Masonry" gives a comparison of entrance infiltration losses in various types of both occupancies and entrances.

REDUCTION OF COOLING EQUIPMENT SIZE

Considering the amount of additional entrance infiltration due to wind pressure in buildings where there are doors in two or more outside walls and the corresponding cooling load and equipment capacity required, the only possibility of guaranteeing conditions without excessive cost is to prevent excessive entrance infiltration. It seems evident from the facts developed that this can be accomplished by the use of a revolving door at one of the opposed entrances. About the only effective alternative would be to close permanently the doors at one of the opposed entrances.

In single entrance buildings the possibility of making a sharp reduction in the original cost of equipment by using doors of the air seal principle should receive the greatest attention of the designer, particularly from the standpoint of improving air distribution and cutting operating costs, sealing out hot drafts from the street should be considered. Air conditioning is too expensive and the adjustment of distribution too delicate a matter not to employ every helpful auxiliary means available.

PERFORMANCE OF ENTRANCE DOORS WITH WINTER HEATING

All of the fundamental objections to uncontrolled entrance infiltration which so seriously affect summer cooling and air conditioning apply as well to winter heating and air conditioning. But the causes of infiltration differ.

Entrance infiltration during the heating season is due to combinations of wind pressure, chimney action of tall buildings and exhaust fan ventilation. Velocities through entrance doors are roughly proportional to the height of buildings and vary with outside temperatures, thus indicating the dominant importance of chimney effect. The following table shows velocities found by tests for normal wind. They will be greatly increased by severe wind storms.

ENTRANCE INFILTRATION VELOCITIES IN TALL BUILDINGS

Height of Building Floors	Normal Entrance Infiltration Velocities Miles per Hour Outside Temp. 35°F.	Outside Temp. 0°F.
5	11.0	12.2
10	13.8	16.8
20	16.0	21.0
30	18.2	26.0
40	20.3	29.00
50	22.5	32.00
60	24.5	35.00

Note: The above velocities are based on normal wind. They will be greatly increased by severe wind storms.

Exhaust fan ventilation causes entrance infiltration in varying degree, depending, of course, on the fan capacity. Medium exhaust fan ventilation is at least equivalent to the chimney action of a 10-story building; heavy exhaust fan ventilation is equivalent to the chimney effect of a 20-story structure.

OPERATION OF DOORS IN WINTER

With a single hinged door controlled by a door check, the equivalent duration of a full door opening for each person passing through is 2 seconds. With a hinged door vestibule (4 feet to 15 feet deep) the equivalent duration of full door opening through the vestibule for each person passing through is 1.5 seconds.

A revolving door prevents through drafts but its rotation causes some displacement which is an infiltration load. This volume depends on the rate of operation and is not seriously effected by wind pressure or chimney action or variations in outside temperature.

Results of tests similar to those made for summer cooling conditions are presented in Table 3 in the accompanying Time-Saver Standards sheet "Heat Transmission and Infiltration through Doors, Windows and Glass Masonry." It should be noted that infiltration is expressed as the cubic feet of air entering per person passing through the doors, whereas in Table 4 on summer conditions the values given are cubic feet per minute per person in the room. In other words, winter infiltration is measured in terms of traffic while summer infiltration is expressed in terms of occupancy.

PHOTO: ACME

Time-Saver Standards

HEAT TRANSMISSION

No. 64—HOW TO FIND HEAT TRANSMISSION OF BUILDING SECTIONS

No. 65—HEAT TRANSMISSION THROUGH BUILDING SECTIONS WITH PER CENT OF HEAT TRANSFER STOPPED BY INSULATION

No. 66—HEAT TRANSMISSION AND INFILTRATION THROUGH DOORS, WINDOWS AND GLASS MASONRY

AMERICAN ARCHITECT
TIME-SAVER STANDARDS

Serial No. 64
NOVEMBER 1936

How to Find HEAT TRANSMISSION of Building Sections

PURPOSE

The determination of heating and cooling loads in buildings is governed in large measure by the heat transmission of the enclosing walls, roofs, floors and other exposed parts of buildings. The "coefficient of thermal transmission," (designated by the symbol (U) which expresses the rate of heat transmission, is given for a number of typical building sections in the accompanying T-S.S. "Heat Transmission through Building Sections with Per Cent of Heat Transfer Stopped by Insulation." Values for other commonly employed building sections are published in the current A.S.H.V.E. Guide. When any building section differs in its assembly of component materials from those published in these or similar sources it is necessary to calculate the overall coefficient of heat transmission U. The method of making such computations and the basic data required are presented in this sheet.

THEORY UNDERLYING CALCULATIONS

The overall coefficient of heat transmission U is the amount of heat expressed in Btu transmitted in one hour per square foot of wall, floor, roof or ceiling for a difference in temperature of 1 degree F between the air on the inside and that on the outside of the wall, floor, roof or ceiling.

It has been determined that heat transfer is retarded by the following elements comprising a wall, roof or other building section, taken in order from outside air to inside air: (1) the resistance of a film of air on the outside (which is generally considered to be exposed to wind velocities averaging 15 miles per hour); (2) the resistance of each layer of building materials forming the structural section; (3) the resistance of each measurable enclosed air space formed within the building section; and (4) the resistance of the surface film of air on the inner face (which is considered to be in still air).

The overall coefficient of heat transmission U is the reciprocal of the sum of the foregoing resistances.

THICKNESS OF MATERIALS

When a material is homogeneous, such as a piece of wood or insulating board, its ability to transfer heat is measured and expressed "per inch of thickness." Its thermal conductivity (k) is the Btu transmitted per hour, per square foot, per degree F difference in temperature between the two faces, *per inch of thickness.* Its internal resistivity is the reciprocal ($1/k$) of its thermal conductivity. When calculating overall coefficients of heat transmission U of building sections it is necessary to take thickness into consideration. Example: Assume a material having a conductivity of .33 and therefore a resistivity of 1/.33 or 3.03 is to be used in a thickness of ¾ inch. In the calculation of its contribution to the resistance of the whole section it is necessary to *divide* its conductivity by ¾″ (.33 ÷ .75) = .44 or to *multiply* its resistivity by ¾″ (3.03 x .75) = 2.27 which is also the reciprocal of .44. It is easy to remember these relationships by the fact that a *low conductivity* (k) indicates superior insulation value while a *low resistivity* ($1/k$) indicates poor insulation value.

When a material is not homogeneous, such as a hollow building block or a composite of plaster and lath, laboratory tests are made for each thickness of material commonly used rather than per inch of thickness. The values are then stated thus: thermal conductance (C) is the Btu transmitted per hour, per square foot, per degree F difference in temperature between the two faces, *for the thickness stated* or used in construction. Internal resistance (R) is the reciprocal of thermal conductance (that is, $R = 1/C$).

If the thermal conductivity or thermal conductance of a material is known, its resistivity or resistance (as the case may be) can be found by taking the reciprocal of the known value.

REQUIRED DATA

The accompanying table gives the values for common building and insulating materials recommended for use in computing heat transmission coefficients by the A.S.H.V.E. Guide, 1936. It shows the conductivity (k) or conductance (C) and the resistivity ($1/k$) or the resistance (R). Values for a variety of proprietary products and for variations from average types of staple building materials may be found in the A.S.H.V.E. Guide, 1936, beginning on page 107. For all normal computations the data presented here should be used.

PROCEDURE

To compute the correct overall coefficient of transmission U for any wall, floor, ceiling or roof section for which the coefficient cannot be found in existing tabular data, proceed as follows:

Rule I. Find in the accompanying table the resistance (R) or the resistivity ($1/k$) of each material, exposed surface and air space in the given section. Where resistivities are given (per inch of thickness) adjust the value to the actual thickness used by multiplying the resistivity by the actual thickness in inches or decimals thereof. Take the sum of all resistances and divide into one (to obtain the reciprocal of the sum); the result is the coefficient of transmission U in Btu per square foot per hour per degree F.

Example 1: To compute the overall conductivity U of Section I in the Time-Saver Table.

Exterior surface resistance (15 mph. wind movement)	.17
Fir sheathing, building paper, Y. P. lap siding	2.00
Air space between studs	.91
Metal lath and plaster, ¾″	.23
Interior surface resistance—still air	.61
Overall Resistance	3.92

Overall coefficient of transmission U = 1/3.92 = .26 Btu per square foot per hour per degree F.

Example 2: To find the effect of using one inch of rigid insulating board in place of wood sheathing and the introduction of one inch blanket form insulation midway in the air space in the same wall:

Exterior surface resistance (15 mph.)	.17
Wood siding (shingles or clapboards)	.78
1″ rigid insulating board sheathing	3.03
First air space	.91
1″ blanket insulation	3.70
Second air space	.91
Metal lath and plaster	.23
Interior surface resistance—still air	.61
Overall Resistance	10.34

Overall coefficient of transmission U = 1/10.34 = .10 Btu per square foot per hour per degree F.

Reflective metals used as insulation must be associated with air spaces. The metal may be installed on one or both sides of an air space or as curtains dividing the air space into two or more separate air spaces. Thus in some cases an air space may have one side faced with aluminum foil and in other cases both sides may be bounded by foil. Values for each condition and for two widths of air spaces are given in the accompanying table.

Rule II. To find the overall coefficient of transmission of any construction involving reflective metals, follow Rule 1, substituting for the normal air space resistance (.91) the resistance of each air space bounded on one or both faces by bright metal as given in the accompanying table. Note this table also includes values for standard assemblies of foils which save the addition of the separate air spaces.

Serial No. 64
NOVEMBER 1936

How to Find HEAT TRANSMISSION of Building Sections

RECOMMENDED VALUES FOR COMPUTING OVERALL COEFFICIENTS OF HEAT TRANSMISSION

MATERIAL	Conductivity or Conductance*	Resistivity or Resistance*
MASONRY MATERIALS		
Brick, Common	5.00	.20
Face	9.20	.11
Brickwork, damp or wet	5.00	.20
Cement Mortar	12.00	.08
Cinder Concrete	5.20	.19
Cinder Blocks— 8 inch } note (a)	.62*	1.61*
12 inch } note (a)	.51*	1.96*
Concrete	12.00	.08
Gypsum Fibre Concrete	1.66	.60
Concrete Blocks— 8 inch }	1.00*	1.00*
12 inch }	.80*	1.25*
Stone	12.50	.08
Stucco	12.00	.08
Hollow Clay Tile— 4 inch	1.00*	1.00*
6 inch }	.64*	1.57*
8 inch }	.60*	1.67*
10 inch } note (b)	.58*	1.72*
12 inch }	.40*	2.50*
16 inch }	.31*	3.23*
Hollow Gypsum Tile— 4 inch	.46*	2.18*
Tile or Terrazzo	12.00	.08
BUILDING CONSTRUCTIONS		
Frame		
Fir Sheathing (1"), Building Paper	.71*	1.41*
Fir Sheathing (1"), Building Paper and Yellow Pine Lap Siding	.50*	2.00*
Fir Sheathing (1"), Building Paper and Stucco	.82*	1.22*
Pine Lap Siding and Building Paper, Siding 4" wide	.85*	1.18*
Yellow Pine Lap Siding	1.28*	.78*
Flooring		
Battleship linoleum (1/4")	1.36*	.74*
Woods (Across Grain)		
Maple or Oak (typical hardwoods)	1.15	.87
Yellow Pine or Fir (typical softwoods)	.80	1.25
ROOFING CONSTRUCTIONS		
Roofing		
Asphalt, composition or prepared	6.50*	.15*
Built-up—3/8 inch thick	3.53*	.28*
Shingles		
Asbestos	6.00*	.17*
Asphalt	6.50*	.15*
Slate	10.37	.10
Wood	1.28*	.78*
PLASTERING MATERIALS		
Plaster (Gypsum)	3.30	.30
Metal Lath and Plaster (3/4")	4.40*	.23*
Wood Lath and Plaster	2.50*	.40*
Plaster Board—3/8 inch	3.73*	.27*
1/2 inch	2.82*	.35*
INSULATING MATERIALS		
Blanket or Flexible Fiber	.27	3.70
Loose fill or bat type:		
Gypsum (flaked, dry and fluffy)	.48	2.08
Mineral Wool, all forms	.27	3.70
Rock Wool, Glass Wool	.27	3.70
Rigid,		
Corkboard	.30	3.33
Fiber, typical wood, cane, etc.	.33	3.03
Reflective Type (see below, Air Spaces faced with reflective metals aluminum foil)		
AIR SPACE AND SURFACE COEFFICIENTS		
Air Spaces, over 3/4" faced with ordinary building materials	1.10*	.91*
Surfaces, Ordinary, Still air	1.65*	.61*
Air in motion, 15 mph	6.00*	.17*
AIR SPACES FACED WITH REFLECTIVE METALS (ALUMINUM FOIL)		
Air space, faced one side with foil: over 3/4" wide	.46*	2.17*
Air space, faced one side with foil: 3/8" wide	.62*	1.61*
Air space, faced both sides with foil: over 3/4" wide	.41*	2.44*
Air space, faced both sides with foil: 3/8" wide	.57*	1.75*
Air space divided in two with single curtain of foil (both sides bright). Each space over 3/4" wide	.23*	4.35*
Each space 3/8" wide	.31*	3.23*
Air space with multiple curtains of foil, bright both sides, curtains more than 3/4" apart, in standard construction:		
2 curtains forming 3 spaces	.15*	6.78*
3 curtains forming 4 spaces	.11*	9.22*
4 curtains forming 5 spaces	.09*	11.66*

NOTES

* Indicates conductances and resistances for the thickness stated or used in construction, not per 1 inch thickness. All values not so marked are conductivities or resistivities and must be proportionately modified if the material is used in any other net thickness than 1 inch.

(a) One air cell in direction of heat flow.

(b) Hollow tile values for 6", 8" and 10" units are based on two air cells in the direction of heat flow. The 12" tile is based on three cells in the direction of heat flow. The 16" hollow tile consists of one 10" and one 16" tile, each having two cells in direction of heat flow.

All values are taken from A.S.H.V.E. Guide 1936, Chapter 5, Table 2, "Conductivities and Conductances of Building Materials and Insulators" and are those recommended for computing heat transmission coefficients.

Example 3: To find the effect of adding to the wall section defined in Example 1 an aluminum faced plaster base and two equally spaced curtains of foil within the air space:

Exterior surface resistance (15 mph.)	.17
Fir sheathing, building paper, Y. P. lap siding	2.00
First air space (bounded 1 side by foil) over .75"	2.17
Second air space (bounded both sides by foil) over .75"	2.44
Third air space (bounded both sides by foil, one being the curtain and the other the plaster base) over .75"	2.44
Metal lath and plaster	.23
Interior surface resistance—still air	.61
Overall Resistance	10.06

Overall coefficient of transmission $U = 1/10.06 = .10$ Btu per square foot per hour per degree F.

PER CENT OF HEAT TRANSFER STOPPED

It is sometimes convenient to express the values resulting from the use of an insulation material in non-technical terms, particularly when dealing with clients. This may be expressed as "per cent of heat transfer stopped by the use of building insulation materials." See T-S.S. Serial No. 65. This percentage may be found as follows:

Rule III. Determine the coefficient of transmission of the building section as it would be constructed without using an insulation material. Also compute the coefficient of transmission of the same section as if the selected insulation materials had been incorporated therein. Subtract coefficient of transmission of the insulated section from the coefficient of transmission of the uninsulated section and divide this difference by the coefficient of transmission of the uninsulated section. Multiply by 100 to obtain per cent of heat transfer stopped by the use of insulation.

AMERICAN ARCHITECT
TIME-SAVER STANDARDS

Serial No. c5
NOVEMBER 1936

HEAT TRANSMISSION through Building Sections with Per Cent of Heat Transfer Stopped by INSULATION

LIGHT FACE figures in table give the coefficient of heat transmission *U* of the building section shown, with the indicated insulation material in place.

BOLD FACE figures in table show the per cent of the heat movement through the uninsulated building section which is stopped by the addition of the indicated insulation.

DEFINITIONS

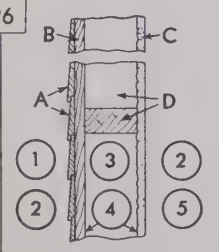
U – Overall coefficient of heat transmission (thermal transmittance) in Btu per hour per sq. ft. of assembled structural section per degree F difference in temperature on exposed faces

% – Per cent of heat transfer stopped =

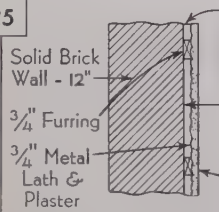
$$\frac{U \text{ (not insulated)} - U \text{ (insulated)}}{U \text{ (not insulated)}} \times 100$$

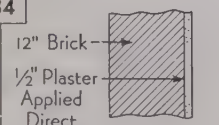
k–Thermal conductivity of homogeneous material in Btu per hour per sq. ft. per inch thickness per degree F difference in temperature on exposed surfaces

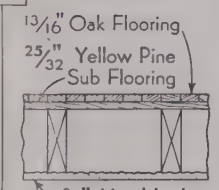
			RIGID BOARD								BLANKET or FLEXIBLE				FILL TYPE (Loose or Batts)		REFLECTIVE METAL FOILS See Note 7 for description of Types				
			k = .33 Average Fibre Board					*k* = .30 Average Cork Board			*k* = .27				*k* = .27 Rock Wool Type	*k* = .48 Powdered Gypsum	1 Air Space - Type I	2 Air Spaces - Type II	Type III 2 Layers	Type III 3 Layers	Type III 4 Layers
			½"	¾"	1"	1½"	2"	1"	1½"	2"	½"	1"	1½"	2"	3⅝"	3⅝"					
U .26 Wood Stud Wall																					
	① In place of sheathing	*U*	.24	.21	.17	.14	.11														
		%	**8**	**19**	**35**	**46**	**58**														
	② Under sheathing or plaster and lath	*U*	.18	.16	.14	.12	.10	.14	.12	.10	.17	.13	.11	.09			.19				
		%	**31**	**39**	**46**	**54**	**62**	**46**	**54**	**62**	**35**	**50**	**58**	**65**			**27**				
	③ Between studs	*U*									.15	.12	.10		.06	.10		.14	.10	.08	.07
		%									**42**	**54**	**62**		**77**	**62**		**46**	**62**	**69**	**73**
	④ Both sides of air-space See Notes 5 & 6	*U*	.18	.15	.12	.10	.07	.12	.10	.07	.13	.09	.07				.19				
		%	**31**	**42**	**54**	**62**	**72**	**54**	**62**	**72**	**50**	**65**	**73**				**27**				
	⑤ As plaster base, ½" plaster	*U*	.19	.17	.15	.12	.10	.14	.11	.10											
		%	**27**	**35**	**42**	**54**	**62**	**46**	**58**	**62**											
U .25 Masonry Wall																					
	① Between furring strips	*U*									.19							.16			
		%									**24**							**36**			
	② Under lath and plaster	*U*	.18	.16	.14	.12	.10	.14	.11	.09	.17	.13	.11	.09			.19				
		%	**28**	**36**	**44**	**52**	**60**	**44**	**56**	**64**	**32**	**48**	**56**	**64**			**24**				
	③ As plaster base, ½" plaster	*U*	.19	.17	.15	.12	.10	.14	.11	.10											
		%	**24**	**32**	**40**	**52**	**60**	**44**	**56**	**60**											
U .34 Masonry Wall																					
	① Cemented to wall, and plastered ½"	*U*	.22	.20	.17	.13	.11	.16	.13	.10											
		%	**35**	**43**	**50**	**62**	**68**	**53**	**62**	**71**											
	② Cemented to wall, no plaster	*U*	.23	.20	.17	.14	.11	.16	.13	.11											
		%	**32**	**41**	**50**	**59**	**68**	**53**	**62**	**68**											
U .25 Wood Floor & Ceiling																					
	① Under flooring or above plaster base	*U*	.18	.16	.14	.12	.10	.14	.11	.09	.17	.13	.10	.09			.19				
		%	**28**	**36**	**44**	**52**	**60**	**44**	**56**	**64**	**32**	**48**	**60**	**64**			**24**				
	② Between joists	*U*									.15	.12	.10	.08	.06	.09		.13	.10	.08	.07
		%									**40**	**52**	**60**	**68**	**76**	**64**		**48**	**60**	**68**	**72**
	③ Both sides of air-space or ① + ④	*U*	.14	.12	.10	.08	.06	.09	.08	.06	.13	.09	.07	.05			.18				
		%	**44**	**52**	**60**	**68**	**76**	**64**	**68**	**76**	**48**	**64**	**72**	**80**			**28**				
	④ As plaster base, ½" plaster	*U*	.18	.16	.14	.12	.10	.14	.11	.09											
		%	**28**	**36**	**44**	**52**	**60**	**44**	**56**	**64**											
U .69 Top Floor Ceiling																					
	① Nailed over floor joists	*U*	.26	.23	.19	.15	.12	.18	.14	.11							.28				
		%	**62**	**67**	**72**	**78**	**83**	**74**	**80**	**84**							**59**				
	② Between joists	*U*									.24	.17	.13	.10	.07	.11		.17	.12	.09	.08
		%									**65**	**75**	**81**	**86**	**88**	**84**		**75**	**83**	**87**	**88**
	③ Above metal lath & plaster	*U*	.34	.28	.22	.17	.13	.21	.16	.12	.30	.19	.14	.11			.28				
		%	**50**	**59**	**68**	**75**	**81**	**70**	**77**	**83**	**56**	**72**	**80**	**84**			**59**				
	④ As plaster base, ½" plaster	*U*	.35	.29	.23	.17	.13	.21	.16	.12											
		%	**49**	**58**	**67**	**75**	**81**	**70**	**77**	**83**											

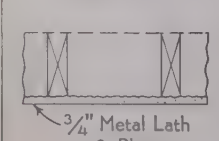


A Siding or Clapboards
B Wood Sheathing
C Metal Lath & Plaster
D Studs, 3¾"









NOTE: Rigid boards replace sheathing and plaster base. Other types added to existing materials

NOTE: Rigid boards usually placed between sub - and finish floors. Values are not affected

NOTE: Double flooring retained in all cases. Rigid boards replace plaster base only

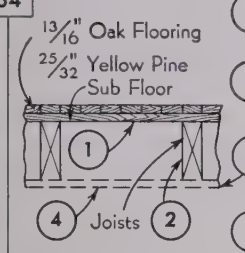
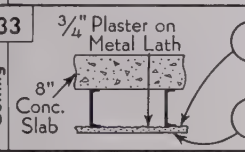
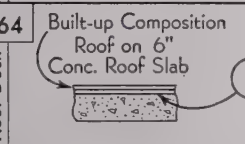
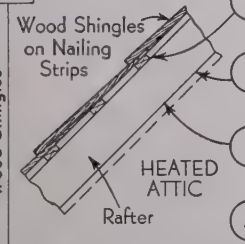
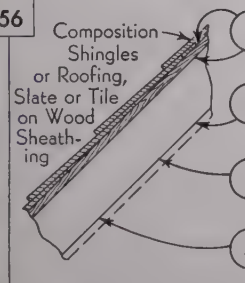
AMERICAN ARCHITECT
TIME-SAVER STANDARDS

HEAT TRANSMISSION through Building Sections with Per Cent of Heat Transfer Stopped by INSULATION

Serial No. 65
NOVEMBER 1936

NOTES

1. All calculations are carried to second decimal only
2. All exterior surfaces are considered exposed to 15 M.P.H. wind, interior surfaces still air
3. Insulating value of building paper is neglected
4. All calculations are based upon "Recommended Conductivities and Conductances for computing Heat Transmission Coefficients," A.S.H.V.E. Guide, 1936

			RIGID BOARD k =.33 Average Fibre Board					RIGID BOARD k =.30 Average Cork Board			BLANKET or FLEXIBLE k =.27				FILL TYPE (Loose or Batts)		REFLECTIVE METAL FOILS See Note 7 for description of Types				
															k = .27 Rock Wool Type	k = .48 Powdered Gypsum	1 Air Space - Type I	2 Air Spaces - Type II	Type III 2 Layers	Type III 3 Layers	Type III 4 Layers
			½"	¾"	1"	1½"	2"	1"	1½"	2"	½"	1"	1½"	2"	3⅝"	3⅝"					
U.34 Floor over Unheated Space		① Under flooring	U	.23	.20	.17	.13	.11	.16	.13	.10							.20				
			%	32	41	50	62	68	53	62	71							41				
		② Between joists	U									.18	.13	.11	.09				.14	.10	.08	.07
			%									47	62	68	74				59	71	76	79
		③ Fastened beneath joists	U	.19	.17	.15	.12	.10	.14	.11	.10	.18	.13	.11	.09			.20				
			%	44	50	56	65	71	59	68	71	47	62	68	74			41				
		④ With ½" rigid insulating board (k.33) used as interior finish	U	.19								.14	.11	.09	.08	.06	.08					
			%	44								59	68	74	76	82	76					
U.33 Supended Ceiling		① Above metal lath & plaster	U	.22	.20	.17	.13	.11	.16	.12	.10	.21	.15	.12	.10	.06	.10	.23	.15	.11	.09	.08
			%	33	41	48	61	67	52	64	70	36	55	64	70	82	70	30	55	67	73	76
		② As plaster base, ½" plaster	U	.22	.20	.17	.13	.11	.16	.13	.10											
			%	33	41	48	61	67	52	61	70											
U.64 Masonry Roof Deck		① Under composition roofing laid on slab	U	.33	.28	.22	.16	.13	.20	.15	.12											
			%	48	57	66	75	80	69	77	81											
U.46 Pitched Roof - Wood Shingles		① Under shingle lath	U	.25	.22	.18	.14	.12	.17	.13	.11	.23	.16	.12	.10			.23				
			%	46	52	61	70	74	63	72	76	50	65	74	78			50				
		② Beneath or between rafters	U	.22	.19	.16	.13	.11	.16	.12	.10	.20	.15	.12	.10			.23	.15	.11	.09	.08
			%	52	59	65	72	76	65	74	78	57	67	74	78			50	67	76	80	83
		③ With ½" fibre board (k.33) used as interior finish	U	.22								.16	.12	.10	.08	.06	.08					
			%	52								65	74	78	83	87	83					
		④ Both sides of air space or ① + ②	U	.14	.12	.10	.08	.06	.10	.08	.06	.15	.10	.08	.06			.22				
			%	70	74	78	83	87	78	83	87	67	78	83	88			52				
U.56 Pitched Roof - Sheathed		① Over or under sheathing	U	.30	.26	.21	.16	.13	.19	.15	.12	.27	.18	.14	.11			.25				
			%	46	55	63	71	77	66	73	79	52	68	75	80			55				
		② Beneath or between rafters	U	.24	.21	.17	.14	.11	.17	.13	.11	.22	.16	.12	.10			.25	.16	.12	.09	.08
			%	57	64	70	75	80	70	77	80	61	71	79	82			55	71	79	84	86
		③ With ½" fibre board (k.33) used as interior finish	U	.24								.17	.13	.11	.09	.06	.09					
			%	57								70	77	80	84	89	84					
		④ Both sides of air space or ① + ②	U	.14	.12	.10	.08	.06	.10	.08	.06	.16	.10	.08	.06			.24				
			%	75	79	82	86	89	82	86	89	71	82	86	89			57				

NOTE: Rigid boards placed between sub - and finish floorings

NOTE: Foil facing enclosed air space under sheathing

NOTES (Continued)

5. Where insulating materials are used on both sides of a dead air space the same thickness and type of insulation is assumed to be employed on each side. In actual practice the thickness used on the cold side may be greater than that used on the warm side (in the case of rigid boards and blankets). To find the correct value for such conditions use the figure given for insulation used on one side of the air space in a thickness equal to the sum of the thicknesses used on both sides, except with reflective metals
6. Where rigid board insulations are shown used on both sides of an air space, they are assumed to replace wood sheathing and metal lath; hence these values are lower than for other materials which do not eliminate structural products
7. Reflective metal foil installations. Calculations for reflective metal foils are based on the assumption that bright aluminum foil is used and that it always faces a dead air space. The values given do not apply to dull sheet metals, aluminum foil paints, or other reflective materials

Type I - Aluminum foil on one side of air space (either warm or cold side.) Also applies to conditions where insulation is used on both sides of a single air space

Type II - Aluminum foil, bright both sides, dividing air space in two

Type III - Aluminum foil, bright both sides, used in multiple curtains without metal-to-metal contact. Spacing of foils is considered uniform in narrow air spaces and in wide horizontal spaces is considered as over ¾" spacing. In all cases where foil would otherwise face an infinite air space, building paper is included to form a limited air space

COPYRIGHT, 1936, AMERICAN ARCHITECT AND ARCHITECTURE

AMERICAN ARCHITECT
TIME-SAVER STANDARDS

Serial No. [illegible]
NOVEMBER 1936

Heat Transmission and Infiltration through Doors, Windows and Glass Masonry

PURPOSE

In the calculation of heating, cooling or air conditioning loads the movement of heat (loss or gain) through doors and windows and the increased heating or cooling load due to air infiltration through the cracks around these openings are determined separately from the heat movement through walls, roofs, ceilings and floors. See T-S.S. "How to Find Heat Transmission of Building Sections," and also T-S.S. "Heating and Air Conditioning Loads—I, II, III."

Presented here are data relating to heat transmission and infiltration through doors and windows, exclusive of solar heat gain through glass, which is considered in T-S.S. "Heating and Air Conditioning Loads—II."

HEAT TRANSMISSION

Since doors and windows may be considered as homogenous materials always exposed to moving air outside and to still air inside, conductances and resistances can be neglected and the overall coefficient of heat transmission U given directly. These coefficients are presented in Table 1. The importance of multiple glazing to reduce condensation and fogging on windows, especially with winter air conditioning, is shown on Chart 1.

INFILTRATION DUE TO CRACKAGE

Air entering buildings from out-of-doors affects heating and cooling loads to an important degree. It may leak directly through walls, enter through cracks around windows and doors and their frames, and enter directly through entrance doors during the periods when they are opened by traffic. Air leakage through walls may be reduced so effectively by a layer of good building paper or by continuous plastered surfaces that this source of infiltration is commonly neglected. There is no measurable infiltration through walls built of structural glass masonry.

Air leakage through cracks can be effectively reduced by weatherstripping. Since the quality and performance of various types of weatherstrips vary over a wide range, it is better, wherever possible, to use authenticated test data supplied by the manufacturer of the material used, than the average values necessarily presented herein.

Note that variations in type and installation make it possible for wood windows to develop double the average leakage shown. Also that proper fitting, especially of steel windows, can materially reduce them.

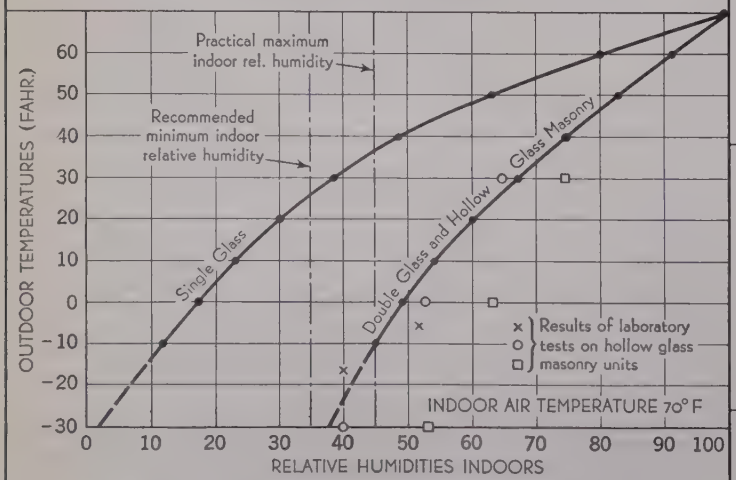
TABLE 1 - COEFFICIENTS OF TRANSMISSION (U)
Doors, Windows, Skylights, Glass Masonry**

		U
Windows and Skylights		
Single sheet of glass (window or plate)		1.13
Double sheets of glass (compound lights, storm sash, etc.)		.45
Triple sheets of glass		.28
Glass Masonry		
Hollow glass blocks*		.50*
Panel Wood Doors (assumed same as glass)		1.13
Solid Wood Doors (calculated values)		
Nominal thickness	Actual thickness	
1	$^{25}/_{32}$	.69
1¼	1 $^{1}/_{16}$	.59
1½	1 $^{5}/_{16}$	.52
1¾	1 $^{3}/_{8}$	.51
2	1 $^{5}/_{8}$	.46
2½	2 $^{1}/_{8}$	.38
3	2 $^{5}/_{8}$	.33

* Tentative value, based on average of tests on three types of units, pending greater accumulation of data. All values assume 15 mph wind velocity

** All other data except as above, from A.S.H.V.E. Guide, 1936, Ch. 5, Table 13

CHART 1 - CONDENSATION ON WINDOWS AND GLASS MASONRY



Condensation or fogging of windows will occur in winter in most parts of the U.S. if single glass is used and indoor relative humidity is maintained within the desirable range. Double glazing and hollow glass masonry cut heat losses approximately in half and greatly reduce likelihood of condensation

TABLE 2 - INFILTRATION THROUGH CRACKS AROUND WINDOWS AND DOORS

Type of Window	Condition	Cubic feet per hour per foot of crack for various velocities in miles per hour					
		5	10	15	20	25	30
DOUBLE HUNG WOOD SASH WINDOWS (UNLOCKED)	Average window, not weatherstripped	6.6	21.4	39.3	59.3	80.0	103.7
	Average window, weatherstripped	4.3	15.5	23.6	35.5	48.6	63.4
	Poorly fitted window, not weatherstripped	26.9	69.0	110.5	153.9	199.2	249.4
	Poorly fitted window, weatherstripped	5.9	18.9	34.1	51.4	70.5	91.5
DOUBLE HUNG METAL WINDOWS	Not weatherstripped, unlocked	20	47	74	104	137	170
	Weatherstripped, unlocked	6	19	32	46	60	76
STEEL SASH WINDOWS	Residential casement, average	14	32	52	76	100	128
	Heavy casement sections, average	8	24	38	54	72	92
	Architectural projected, average	20	52	88	116	152	182
	Hollow metal, vertically pivoted	30	88	145	186	221	242
DOORS*	Well fitted, not weatherstripped	27	69	111	154	200	249
	Well fitted, weatherstripped	14	35	55	77	100	125
	Poorly fitted, not weatherstripped	54	138	221	308	398	499
	Poorly fitted, weatherstripped	27	69	111	154	200	249
DOORS**	In active use, as in stores	81	207	332	462	598	748

NOTES: * Values for door leakage are based on rules-of-thumb in common use and are not test values. ** For more exact data see Tables 3 and 4.
For more detailed data see Chapter 6, A.S.H.V.E. Guide, 1936

Copyright 1936, AMERICAN ARCHITECT AND ARCHITECTURE

Heat Transmission and Infiltration through Doors, Windows and Glass Masonry

Serial No. 66
NOVEMBER 1936

Infiltration through cracks around windows and doors may be computed from data in Table 2:

1. Measure the lineal feet of crack around each opening as follows: For double hung windows take the perimeter plus the length of the meeting rail. For casements and pivoted windows take aggregate perimeter of all movable or ventilating sections.

2. Determine the total *effective* crackage (which is the total crackage adjusted to allow for exfiltration from the leeward side of buildings) as follows: In a room having one exposed wall take all of the crack. With two exposed walls use the wall having the most crack. With three or four exposed walls, take the wall having the most crack but in no case less than half the total crack.

3. Find the prevailing average wind velocity from local weather bureau data or from T-S.S. "Heating and Air Conditioning—Basic Data." Refer to Table 2 for the cubic feet of air entering per hour, per lineal foot of crack, for the selected wind velocity and for the type of window or door under consideration. Multiply this value by the effective crackage in lineal feet. The result is the total cubic feet of air per hour due to infiltration.

For data on converting this leakage into heating and cooling loads see T-S.S. "Heating and Air Condition Loads—I."

INFILTRATION THROUGH ENTRANCE DOORS

Due largely to lack of authentic test data it has been customary to neglect the air entering a building while entrance doors are in use except by the rule-of-thumb: "A single door in frequent use, as in a store, should have an infiltration value applied which is three times that for a well fitted door."

Recent research based on field tests on nearly 600 entrances reveals that heating and cooling loads are materially affected by entrance door infiltration.*

Losses in summer are governed by wind velocity, type and size of doors, presence of cross draft through building due to doors in different walls and volume of traffic or nature of occupancy of the buildings. In winter, these losses are governed by the chimney effect due to the height of the building, and volume of traffic. In buildings of commercial character, therefore, the total infiltration load through entrance doors should be calculated from data in Table 3 for winter conditions and Table 4 for summer conditions.

* The Infiltration Problem of Multiple Entrances, by A. M. Simpson and K. B. Atkinson; A. S. H. V. E. Journal Section, Heating, Piping and Air Conditioning, June, 1936.

TABLE 3 - INFILTRATION THROUGH ENTRANCE DOORS - WINTER CONDITIONS

Height of Building-Floors	Entrance Infiltration - Cubic Feet per Person Passing Through					
	72" Revolving Door		36" Hinged Door Vestibule		36" Single Door	
	Traffic over 800 per Hr.	Traffic under 800 per Hr.	Temp. 35° F	Temp. 0° F	Temp. 35° F	Temp. 0° F
5	20	32	490	540	650	720
10*	20	32	610	735	810	980
20*	20	32	710	930	940	1240
30	20	32	805	1140	1070	1530
40	20	32	900	1280	1200	1700
50	20	32	980	1410	1320	1880
60	20	32	1080	1540	1440	2050

* EXHAUST FAN VENTILATION; Medium exhaust fan ventilation causes entrance infiltration at least equivalent to the chimney action of a 10 story building and heavy exhaust fan ventilation causes entrance infiltration equivalent to the chimney action of a 20 story building

TABLE 4 - INFILTRATION THROUGH ENTRANCE DOORS - SUMMER CONDITIONS

Type of Establishment	Entrance Infiltration - Cubic Feet per Minute per Person in Room					
	72" Revolving Door		36" Hinged Door - Single Entrance (Doors in one outside wall only)		36" Hinged Door - Cross Draft Entrance (More than one door in different walls)	
	Small Occupancy Max. Infiltration	Large Occupancy Min. Infiltration	Maximum Infiltration(1)	Minimum Infiltration(2)	Max. Infiltration(1)	Min. Infiltration(2)
Bank	4.7	2.0	22.0	7.0	30.5	13.4
Barber Shop	2.3	2.3	11.0	3.5	15.2	6.7
Broker's Office	4.7	3.3	22.0	7.0	30.5	13.4
Candy & Soda	3.5	2.0	16.5	5.2	22.7	10.0
Cigar Store	14.5	8.0	66.0	20.8	91.0	40.0
Dept. Store (Small 5 & 10¢)	6.4	3.0	33.0	10.4	45.5	20.0
Dept. Store (Large)	4.7	2.0	22.0	7.0	30.5	13.4
Dress Shop	1.7	1.6	8.2	2.6	11.4	5.0
Drug Store	4.7	3.3	22.0	7.0	30.5	13.4
Furrier	1.7	1.6	8.2	2.6	11.4	5.0
Hospital Room	—	—	3.5	3.5	—	—
Lunch Room	3.5	2.0	16.5	5.2	22.7	10.0
Men's Shop	2.3	2.1	11.0	3.5	15.2	6.7
Office (Private)	—	—	2.5	2.5	—	—
Office (Professional)	—	—	3.5	3.5	—	—
Office Building	1.2	.5	5.5	1.7	7.7	3.4
Public Building	1.7	.7	8.2	2.6	11.4	5.0
Restaurant	1.7	.7	8.2	2.6	11.4	5.0
Shoe Store	4.7	2.1	11.0	3.5	15.2	6.7

(1) - Maximum values for exposed position and average wind velocity above 10 miles per hour

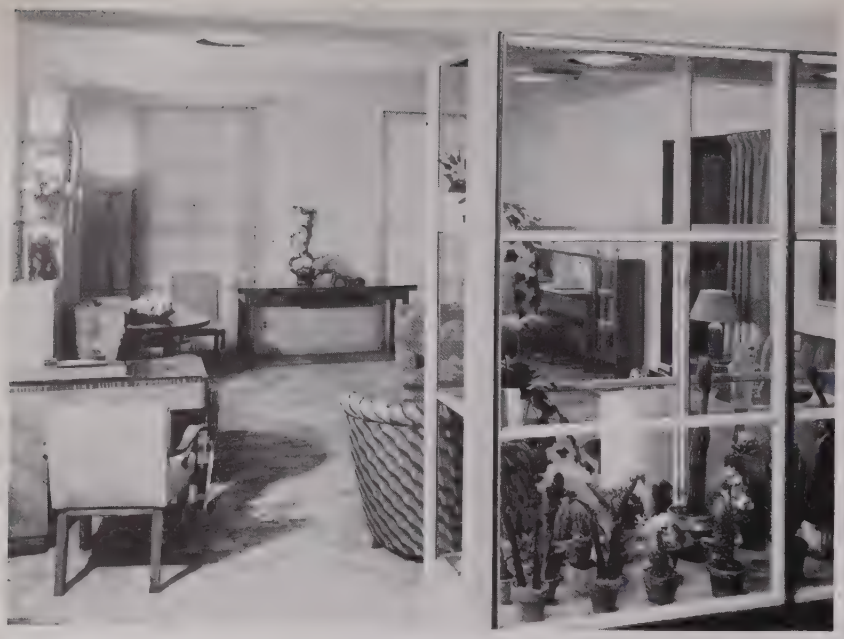
(2) - Minimum values for sheltered location and average wind velocity below 5 miles per hour

NOTES: For vestibule (double bank of hinged doors) entrance infiltration is 25% less than the value for single bank of hinged doors given above

With two doors only, each one in different outside walls figure as SINGLE ENTRANCE during portion of time opposite door is closed and as cross draft entrance during portion of time opposite door is open. With two or more doors in each of two or more outside walls figure throughout as cross draft entrance

Copyright 1936, AMERICAN ARCHITECT AND ARCHITECTURE

THREE ARCHITECTS AS DECORATORS



1

2

3

DUE to a constantly increasing acceptance of modern design, architects are assuming a more important position as decorators and designers of decorative appurtenances. Usually their work in decoration is limited to that for the individual client. Recently, Grosfeld House, New York furniture manufacturers opened an exhibition consisting of two model houses, one decorated in various traditional styles and the other modern. Three of the rooms and their furniture in the modern house were designed by well-known architects.

1. Eugene Schoen's living room was distinguished by the manner in which he introduced a relationship between the interior and the exterior of a modern home. A large flower window, forming a wall of the house gives one a feeling that the room extends into the garden. The feeling of openness is further achieved through the lack of door openings between the rooms. Another noteworthy feature is the harmonious effect which can be achieved by combining Amboyna, Sapeli, Paldao and Japanese Ash Woods in one setting. The room is done in soft beige with hand carved beige carpet.

2. Irvin Scott, in his library, demonstrated the versatility of sectional furniture in a modern library in which the pieces of light, tropical Yuba wood are arranged into built-in wall units, while the upholstered pieces adapt themselves to use as a long sofa, love seat, or corner chairs. The sectional furniture may be used interchangeably as dividing partitions, bookcases, curio cabinets, desks, storage facilities, or other practical units. The walls, draperies and carpet are carried out in two-tone effect of sand color and black with touches of green introduced in the upholstered pieces.

3. Morris Sanders, winner of the Architectural League's 1936 Silver Medal, created a trim modern bedroom within a background of three white walls and one in Chinese red, and an imposing full height window of glass brick. Mr. Sanders avoided the use of color in the furniture, preferring to confine his color to the red wall. The furniture combines the softness of brown leather with African Walnut wood with metal trimmings to emphasize wood tone.

Main Lounge

"My Schemes were built around Bigelow Carpets"... says Neel D. Parker,

Advisory Decorator of the San Francisco War Memorial

We're proud of the part Bigelow carpets played in decorating the luxurious War Memorial building in San Francisco. We're proud, too, of the fine tribute paid Bigelow by Neel D. Parker, the advisory decorator on this project.

"I have been sold on Bigelow carpets for a long time," says Mr. Parker. "Bigelow not only makes excellent qualities, but has a very fine color range and unusual patterns as well. I have always found their service to be exceptional. They have men at the head of various departments who know all there is to know about carpets."

Architects and decorators all over the country have found us helpful in solving the multitude of carpeting problems that call for highly specialized knowledge. Whatever *your* problem. may we serve you, too, as Carpet Counsel? Contract Department, Bigelow-Sanford Carpet Co., Inc., 140 Madison Ave., New York, N. Y.

Carpet Counsel by Bigelow Weavers

THE *Insulite* WALL

INSULATE

BILDRITE SHEATHING

On the outside of the wall Bildrite Sheathing offers these advantages:

1. **Four times the bracing strength of eight inch shiplap.**
2. **Far more insulation than lumber.**
3. **No open joints or knotholes . . . windproof walls.**
4. **Easily handled . . . does not injure hands, does not gum up tools.**
5. **Waterproofed by a patented asphalt treatment.**
6. **One solid piece $^{25}/_{32}$ inch thick . . . easily applied.**

BILDRITE SHEATHING →

LOK-JOINT LATH

On the inside of the wall, Lok Joint Lath as a plaster base offer you these advantages:

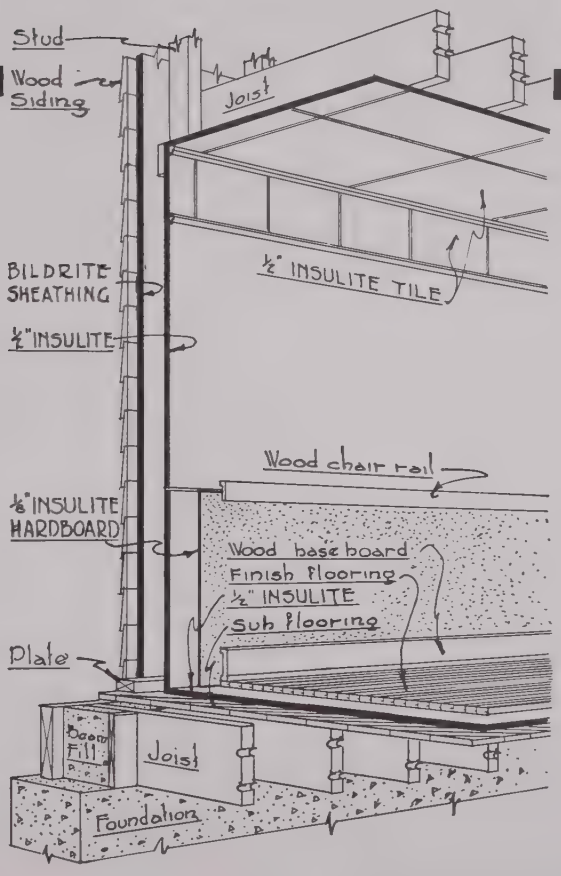
1. **Eliminates lath marks on walls and ceilings.**
2. **Reduces passage of sound through walls and ceilings.**
3. **Effectively insulates.**
4. **The "Lok" joint assures a rigid level plastering surface.**
5. **Minimizes plaster cracks.**

← LOK-JOINT LATH

INSULATE WITH INSULITE

OF PROTECTION

AS YOU BUILD



INSULITE INTERIOR FINISH

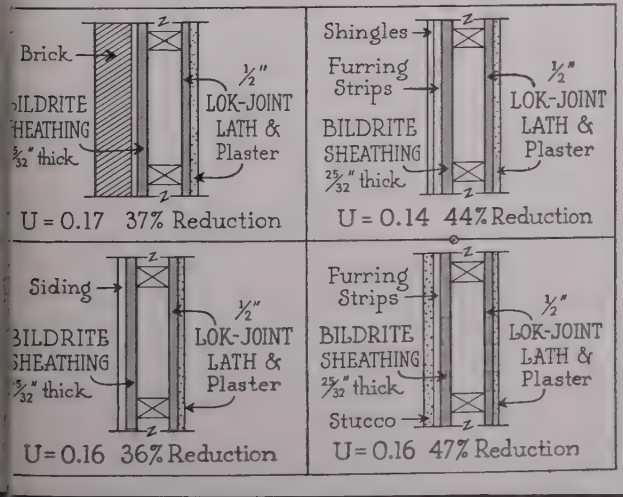
Insulite interior finish products... Tile, Plank, Building Board and Hardboard... may be used on the inside of the wall to:

- **Provide permanent decoration.**
- **Assure charming, modern interiors.**
- **Effectively insulate.**
- **Correct acoustics.**
- **Reduce the passage of sound through walls and ceilings.**

Buildings constructed with the Insulite wall of protection are buildings of permanence and comfort. Let us send you complete details and samples.

HEAT LOSS REDUCTIONS

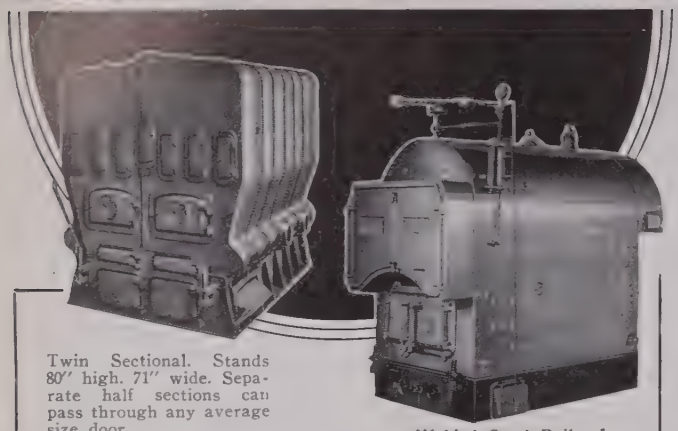
Compared with same relative type of construction with wood sheathing and wood lath. The same percentage of reduction applies when ½" Insulite interior finish products are used instead of Lok-Joint Lath.



THE INSULITE COMPANY

Department AA76, Minneapolis, Minnesota

Burnhams



Twin Sectional. Stands 80" high. 71" wide. Separate half sections can pass through any average size door.

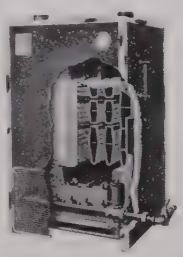
Welded Steel Boiler having a capacity from 1,800 to 42,500.

There's One for every Place and Purpose

A specially designed Built-In Oil Burning Boiler.

This Ad is frankly by-way-of-remindment. A sort of memory-jogger.

You may have used certain of our boilers and sort of placed us in your mind as not having other kinds. For instance a specially designed Gas Boiler. A heavy-duty high pressure Hot Water Supply Boiler. Likewise a Welded Steel one. Or a big cast iron Twin Section one, that is so largely used for replacements, as the sections can pass through any average size door. Does away with all tearing out cost and nuisance.



Gas Boiler. It has fully lived up on the job, to the test made at the plant. An excellent performance.

All of which boils down to the fact that Burnham makes boilers for all fuels and for every place and purpose.

The dependable Round Boiler for regular heating. Also made for high pressure hot water supply.

Glad to send you our new catalog No. 74 covering all heating equipment.

Burnham Boiler Corporation

IRVINGTON, NEW YORK

ZANESVILLE, OHIO

Representatives in All Principal Cities of the United States and Canada

SULLIVAN LETTERS AT COLUMBIA

The Avery Architectural Library of Columbia University has recently come into possession of an important and unique Sullivan item. It is a scrapbook, prepared by Sullivan's close friend, Lyndon P. Smith, and contains not only clippings of the complete first publication of the "Kindergarten Chats" in the "Interstate Architect and Builder" for 1901-1902, but also several letters from Sullivan to Smith, numerous manuscript comments on the history and derivation of this series of articles made by Smith, and on the back cover, Sullivan's original pencil layout for the completed series, made when the series was about half finished. It is dated "Palisades, New York, August 12, 1901," and signed "Louis H. Sullivan."

Lyndon P. Smith was an architect whose chief claim to fame seems to have been his continuing friendship with Louis Sullivan. He wrote the article in the "Architectural Record" on the Schlesinger and Mayer building in July 1904 pages 53-60. This article, by the way, is particularly rich in illustrations of the lavish decorative metal work on the Schlesinger-Mayer building in which Sullivan's ideas of dynamic growth-expressing lines were possibly carried further than in any of his other work.

At the period during which the "Kindergarten Chats" were written, Lyndon Smith was living in Palisades, New York, and several of the articles in the series were composed while Sullivan was visiting him there. The whole series of fifty-two articles was an attempt by Sullivan to place his extraordinary organic philosophy in relation to the architecture of America, and to present the whole in a way which was vivid and compelling. He evidently realized the importance which this series had in his own development, and also as perhaps the most alive presentation of his basic ideas. For instance, on February 22, 1901, Sullivan wrote from Chicago as follows:

The 'Kindergarten Chats' will strike deeper than you are inclined to imagine. As a psychological study they will be far and away beyond anything I have hitherto attempted. The key to them, you will find, as the development proceeds, slowly but elaborately,—in the development of the character and artistic nature of the young man, *from within*.

It will be the first serious attempt ever made to test architecture by human nature and democracy. Don't let a certain flippancy of treatment mislead you. Try to spread them as far as you can among the laity, for they will be free from technicalities. I am writing for the people, not for architects.

Kelly is a rough diamond. He deserves great credit for his nerve and foresight, and a certain vague but strong desire to make his journal an educational power. He insisted that I should write absolutely with a free hand. It's a pretty heavy money investment for him and he ought to be backed up with subscriptions. I have written 27 of the articles, so I have my "curve" all right.

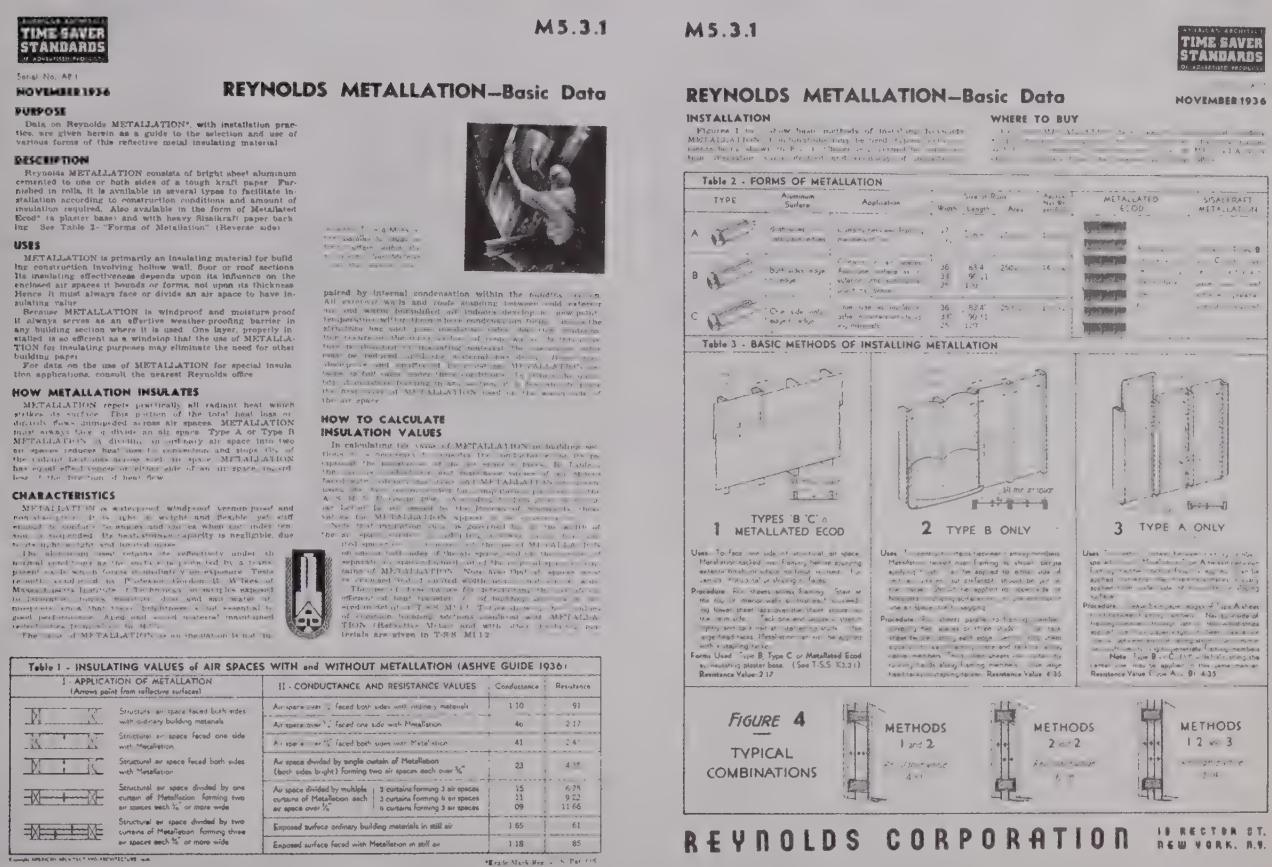
Yours,

(Signed) Louis."

As he progressed in writing the series, and Kelly's insistence that he write "absolutely with a free hand" was leading to more vigorous and perhaps more bitter denunciations of what he felt was cheap and wrong in the American architecture of the time, he evidently came to realize that what he was writing was really more for the genera

NEW INSULATION DATA

FOR YOUR INFORMATION AND REFERENCE


TIME-SAVER STANDARDS

M5.3.1

Serial No. AB-1

NOVEMBER 1936

REYNOLDS METALLATION—Basic Data

PURPOSE

Data on Reynolds METALLATION*, with installation practice, are given herein as a guide to the selection and use of various forms of this reflective metal insulating material

DESCRIPTION

Reynolds METALLATION consists of bright sheet aluminum cemented to one or both sides of a tough kraft paper. Furnished in rolls, it is available in several types to facilitate installation according to construction conditions and amount of insulation required. Also available in the form of Metallated Ecod* (a plaster base) and with heavy Sisalkraft paper backing. See Table 2—"Forms of Metallation" (Reverse side)

USES

METALLATION is primarily an insulating material for building construction involving hollow wall, floor or roof sections. Its insulating effectiveness depends upon its influence on the enclosed air spaces it bounds or forms, not upon its thickness. Hence it must always face or divide an air space to have insulating value.

Because METALLATION is windproof and moisture proof it always serves as an effective weather-proofing barrier in any building section where it is used. One layer, properly installed, is so efficient as a windstop that the use of METALLATION for insulating purposes may eliminate the need for other building paper.

For data on the use of METALLATION for special insulation applications, consult the nearest Reynolds office.

HOW METALLATION INSULATES

CHARACTERISTICS

HOW TO CALCULATE INSULATION VALUES

Table 1 - INSULATING VALUES of AIR SPACES WITH and WITHOUT METALLATION (ASHVE GUIDE 1936)

I - APPLICATION OF METALLATION (Arrows point from reflective surfaces)	II - CONDUCTANCE AND RESISTANCE VALUES	Conductance	Resistance
Structural air space faced both sides with ordinary building materials	Air space over ¾" faced both sides with ordinary materials	1.10	.91
Structural air space faced one side with Metallation	Air space over ¾" faced one side with Metallation	.46	2.17
Structural air space faced both sides with Metallation	Air space over ¾" faced both sides with Metallation	.41	2.4[illegible]
Structural air space divided by one curtain of Metallation forming two air spaces each ¾" or more wide	Air space divided by single curtain of Metallation (both sides bright) forming two air spaces each over ¾"	.23	4.[illegible]
Structural air space divided by two curtains of Metallation forming three air spaces each ¾" or more wide	Air space divided by multiple curtains of Metallation each air space over ¾": 2 curtains forming 3 air spaces	.15	6.79
	3 curtains forming 4 air spaces	.11	9.22
	4 curtains forming 5 air spaces	.09	11.66
	Exposed surface ordinary building materials in still air	1.65	.61
	Exposed surface faced with Metallation in still air	1.18	.85

M5.3.1

REYNOLDS METALLATION—Basic Data

NOVEMBER 1936

INSTALLATION

WHERE TO BUY

Table 2 - FORMS OF METALLATION

Table 3 - BASIC METHODS OF INSTALLING METALLATION

1 TYPES B C or METALLATED ECOD

2 TYPE B ONLY

3 TYPE A ONLY

FIGURE 4

TYPICAL COMBINATIONS

METHODS 1 and 2

METHODS 2 and 2

METHODS 1 2 and 3

REYNOLDS CORPORATION 19 RECTOR ST. NEW YORK, N.Y.

Bright metal insulation is one of the most discussed subjects in architecture and building. In order to provide you with the latest, authoritative data, we have prepared a Time-Saver Standards Sheet on Reynolds Metallation*, giving established facts about its efficiency and approved methods of installation. We are glad to offer copies of this Time-Saver Standards Sheet to all architects, so that their offices may be fully informed on the subject of this increasingly popular insulation.

In brief: Metallation provides permanent high-efficiency at very low cost; its insulating value is not impaired by moisture; it saves time and expense in heating or cooling a structure because of its low heat storage capacity. We believe that Reynolds Metallation, according to all known tests, gives more insulation per dollar than other materials. Its use leaves more dollars to be spent on other parts of the building. In these days of tight budgets it solves many a knotty problem.

If you are not enrolled to receive Time-Saver Standards as issued, use the coupon below or your letterhead for your copies of the Time-Saver Standards Sheet on Reynolds Metallation.

*Trade-Mark Reg. U. S. Pat. Off.

REYNOLDS CORPORATION,
19 Rector Street, New York

Name.............................

Address.............................

Number of copies desired.............

REYNOLDS CORPORATION

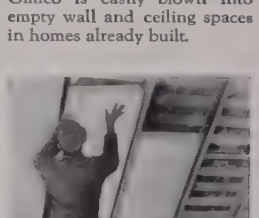
19 RECTOR STREET, NEW YORK

Reynolds Air Conditioning, Metalumber Framing, Joists and Slabs, Metallation, Ecod Fabric-Reinforced Plaster Base, Paints, Liquid Metallation, Steel Windows

Drafty rooms, cold floors, uneven temperatures throughout the house...no wonder this little fellow rebels! But there is no reason why this should happen in the homes you plan. Safeguarding health and providing comfort for your clients are services they'll appreciate more than any other... especially when you can assure these benefits at a *saving of up to 50% of fuel costs!*

You can do this by specifying Gimco Rock Wool Insulation. According to U S. Bureau of Standards tests, its effectiveness in retarding heat leaks is unsurpassed in home building insulation. It is fire-proof, moisture-proof, and vermin-proof. It will not pack down, dust out, disintegrate, or deterioriate. Gimco lasts as long as the house itself, and adds greatly to the permanent value of the property.

Gimco is easily blown into empty wall and ceiling spaces in homes already built.



Gimco bats are easy to install in buildings under construction.

Let us tell you more about Gimco Rock Wool, and how our local dealer is prepared to cooperate with you. Just write to the General Insulating & Mfg. Co., Alexandria, Ind.

Gimco
ROCK WOOL
HOUSE INSULATION
Made by the world's largest exclusive manufacturers of Rock Wool Products

public than for the architect, and that architects would b either blinded to its message by his denunciation of muc that they were doing, or else so immersed in technicali ties that its philosophy would be over their heads. In an other letter to Smith, which bears no date but evidently wa written a little earlier than the one just quoted, he writes "My dear Lyndon:

I should like to have the 'Kindergarten Chats' circulate as extensively as possible among the *laity*. The architect will not understand much of what is in them, but the laity more open minded, will.

Please send to

E. C. Kelly
Mgr. Interstate Publishing Co.
Chamber of Commerce Bldg.
Cleveland, Ohio

as copious a list as you can of those who might be intereste in reading these articles, and he can send them notices an a subscription blank. It is among the *people* that we war to work. The composition of the articles is going along mer rily. I have written 27. In the 24th I get the 'young mar out of doors on a hot summer's day, and the *awakenin* begins.

Let me know, from time to time your impressions of th articles, as they appear. How is everything with you an yours?

Truly,

Sullivan."

It is one of the tragic happenings of American architec tural history that this series of articles should have bee published in an obscure weekly technical paper which neve enjoyed a large circulation. Its numbers have unaccountabl disappeared, because, as far as I know, this set, in Lyndo Smith's scrapbook, and now in the Avery Library, is one c only two or three extant today; Lyndon Smith though it a unique set.

Nevertheless, despite the comparatively small circulatio which these articles enjoyed, their fame spread rapidly, an the "Kindergarten Chats" were almost a legend—as importa and elusive as many legends—until the reprint of the series edited by Mr. Claude Fayette Bragdon, was brought ou by the Scarab Fraternity in 1934. It is noteworthy that i this reprint Mr. Bragdon felt himself called upon occasion ally to moderate Sullivan's vituperations and to eliminat some of his puns and some of his slang. Just how far thi modification went, only a word for word examination of th original would reveal. The changes are undoubtedly ver minor and admirably fitted to make the articles more under standable today. On the other hand, to read them actuall as they came, hot from Sullivan's imagination, puns, vitupera tion, and all, is an experience worth having. Whatever on may think of the quality of Sullivan's poetry, and howeve one may deplore certain narrownesses of appreciation an certain blindnesses to other types of architecture than hi own, one can only admire the extraordinary vitality of th entire series. The wide sweep of its design, and especiall Sullivan's deep feeling that architecture and human life economically and politically, as well as culturally, were in evitably bound together—that to change one was to chang the other—that was insight rare at the time. It is that whic makes Sullivan the unique figure he is. The blindnesses an some of the vituperation were the results of a life of tragi conflict which neither Sullivan nor his opponents understoo

Sloane-Blabon AHOY!

Henry Davis III, Architect

Sloane-Blabon Linoleum, Azure Blue with Gray center circle and stars of Clear White, plays an important part in the decorative scheme of the club's lounge.

* * *

The Sloane-Blabon Linoleum floor in the bar, below, is particularly colorful. The largest area is Azure Blue; the wave effect, Clear White; the border, Burgundy.

IT goes without saying that a yacht club should have a nautical atmosphere. How well this has been achieved in the Tri-State Yacht Club at Essington, Pennsylvania, is shown in the accompanying photographs.

The officers of the club have been good enough to say the following about the contribution of Sloane-Blabon Linoleum to the attractiveness of these rooms:

"The smart and colorful appearance of the linoleum floor attracts all-comers and completes two extremely pleasing rooms. We are well satisfied with Sloane-Blabon Linoleum and the manner in which it stands up under hard wear."

We shall be glad to send you a list of other recent Sloane-Blabon installations together with our new, profusely illustrated Linoleum Handbook. Write W. & J. Sloane, Selling Agents Division, 295 Fifth Ave., New York.

SLOANE-BLABON LINOLEUM

It's COLD here . . . . .

(at the top of Mount Washington)

...but it's WARM inside

(note Cabot's Quilt insulation)

The Mount Washington observatory has perhaps the coldest and most exposed location of any winter residence in the United States. It is kept warm for the young men who occupy it all winter by a stove in the living room, a chimney pipe extension into the bunk room (pictured above)—plus the insulating power of Cabot's QUILT.

Cabot's Quilt is one of the most effective and economical of all insulations. Furthermore, it is a proved fact that Cabot's Quilt does not lose its insulating properties even after decades of service. From the evidence of old buildings, recently demolished, we know that it is vermin-proof, that it does not pack down, does not deteriorate. It is as permanent as any part of the building.

FREE QUILT BOOKLET—If you are interested in the subject of insulation, write for our Quilt booklet, *Build Warm Houses.* Samuel Cabot, Inc., 1143 Oliver Building, Boston, Massachusetts.

Cabot's Quilt

HEAT INSULATING—SOUND DEADENING

a tragic conflict which embittered and eventually destroyed him. The marvel is that out of such bitterness, out of such unhappiness, there could flow these vividly presented architectural truths and these almost orgiastic hymns to the power of nature.

Lyndon Smith was one of the few men who realized the implications of this series of articles to the full. On the next to the last page of the scrapbook, he wrote the following statement:

"The Series herein contained represents the views, philosophy and preachments resulting from many years of observation and study resulting again in eminent results of a 'practical' nature of a true *Master of Art.*

To the unbiased and receptive mind of the young, they can be of great value, a store house of intellectual and psychological lore; not to be read superficially but with a gradual awakening of normal moral life. To the elderly and experienced they speak with prophetic force.

I know of no other copy extant except possibly the original manuscript and its successive transcripts.

In case of my demise, it is my desire that this book be placed within the reach of students of Art, possibly in the Avery Library, Columbia, or similar abiding place of thought.

Lyndon P. Smith."

A more personal touch is given by his comments written on the last page, telling the story of Sullivan's visit to Palisades in a way sympathetic and deeply felt.

"The morning after S. arrived at Palisades, we went down the hill to Sneeden's Landing—the western side of Dobb's Ferry, N. Y. There, sitting on the frame of an old sailboat hulk, he thought out his final chapters. On returning home, he wrote out the synopsis (sic) opposite. The articles were written under vastly varying conditions and environment. In smoky Chicago—around the spots at Palisades—down in the Sunny South at his beautiful place in Ocean Springs, (see my Art, in Architectural Record 1905) and in varying moods.

While at my place, he was often at his best—many walks in the woods and drives down the Palisades and back into the country. It seemed as if it were the zenith of our friendship and lives.

He enjoyed his visit greatly—so did I.

L. P. S."

It seems particularly fitting that as Lyndon Smith wished, this scrapbook has finally come to rest on the shelves of the Avery Library, to take its place with the other expressions of great architectural thinking there enshrined.

KELVIN BUST FOR SMITHSONIAN

A bronze bust of Lord Kelvin of Largs, Nineteenth Century British physicist, commonly known as the "father of modern refrigeration and air conditioning," was recently presented to the Smithsonian Institution by officials of the English-Speaking Union.

The gift was made possible through the generosity of George W. Mason, president of the Kelvinator Corporation, who was among the prominent guests who gathered to do honor to the great scientist whose name is identified with the Kelvinator, first electric refrigerator for household use; the kelvin, a commercial unit of electricity; Kelvin's law for measuring the most economical diameter of an electric wire; and Kelvin, or Absolute, temperature scale.

Specify "Pennvernon"...not just "window glass"

DEFECTS CAN'T ESCAPE discovery when this Pennvernon Craftsman subjects Pennvernon Glass to edge inspection! As part of a regular system of checking Pennvernon quality, at frequent intervals he inserts one edge of a sheet of glass into his mercury vapor lamp. There, violet illumination, spreading through the glass edges, mercilessly exposes all seeds and other imperfections.

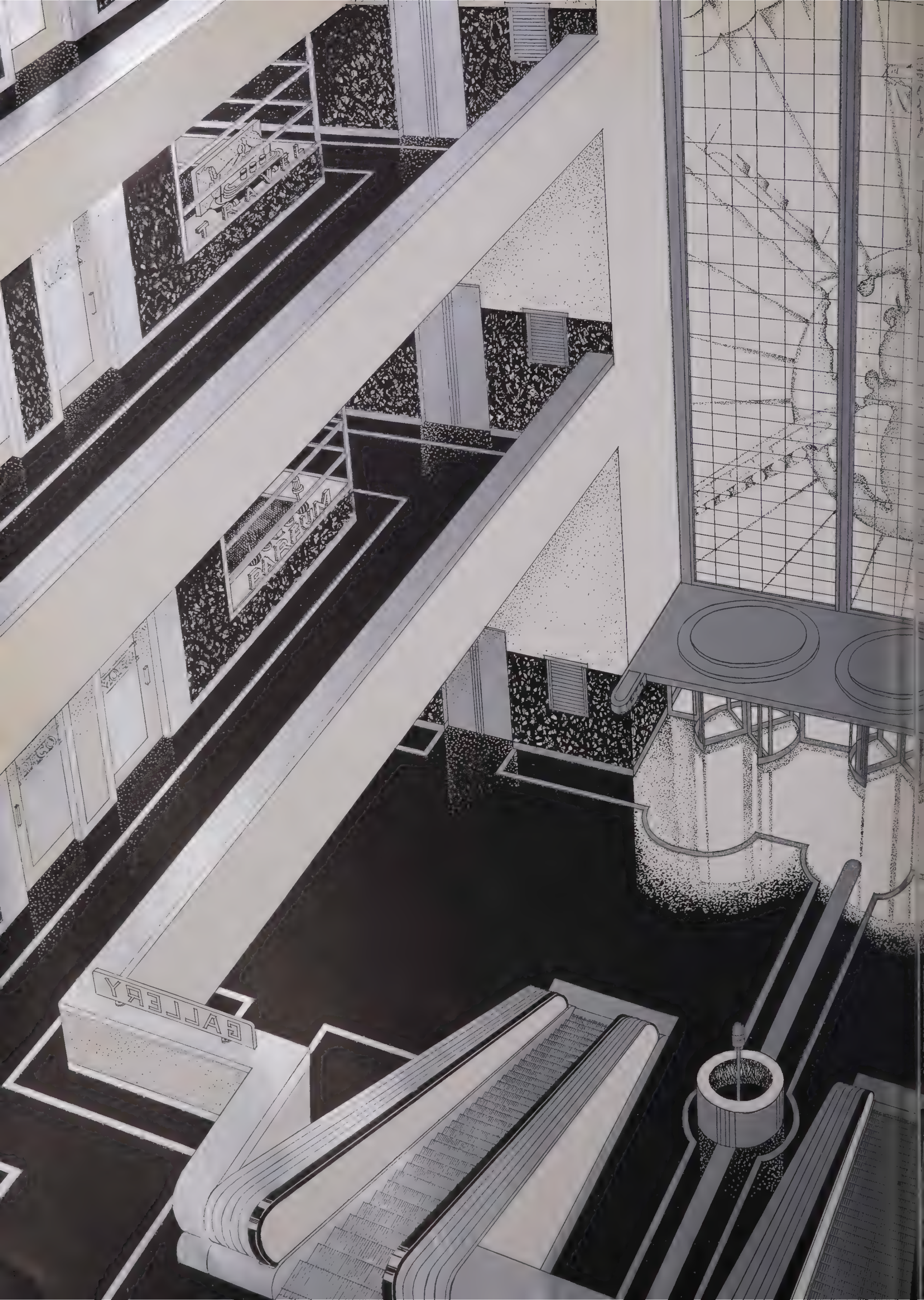
Our new booklet, called "The Making of a Leader", describes in dramatic pictures the manufacture of Pennvernon Window Glass. To get your free copy of this interesting book, sign and mail this coupon to

PITTSBURGH
PLATE GLASS COMPANY
2198A Grant Building, Pittsburgh, Pa.

Name_____

Address _____

City _____ State _____


GALLERY

ECONOMY WITH BEAUTY

● The beauty of the many lustrous surfaces of Aluminum needs no fan-fare ★ The economy of Aluminum as a general-purpose architectural material is equally evident ★ All forms of Aluminum are easy to fabricate, to handle, to erect ★ There can be no streaking or staining of adjoining surface ★ A wide variety of finishes may be used to obtain your most cherished decorative effects ★ Alcoa Aluminum gives real economy in first cost, real economy in upkeep ★ No accident is this wedding of economy with beauty ★ Architectural requirements as to form and shape and finish have been a major program with us for many years ★ We think you would find discussion with one of our engineers highly profitable ★ Aluminum Company of America, 2195 Gulf Building, Pittsburgh, Pennsylvania.

ALCOA
ALUMINUM

REG. U. S
PAT. OFF

...that is all that need be done to have your shipment, large or small — shipped swiftly, safely and economically **anywhere** by Railway Express. Prompt pick-up by a swift motor vehicle, "hurry-up" service on fast passenger trains, and speedy delivery to destination. Railway Express' 57,263 skilled employees and 23,000 offices are ready for instant action when you pick up your 'phone. Free insurance up to $50 covers every shipment and additional liability costs only 10 cents per $100 valuation. For service or information telephone the nearest Railway Express Agent.

RAILWAY EXPRESS
AGENCY INC.
NATION-WIDE RAIL-AIR SERVICE

HOUSE BEAUTIFUL AWARDS

The judgment of the 9th Annual House Beautiful Small House Competition was completed last month. In addition to the usual awards was a special prize this year for a week-end house. The judges were Kenneth Kingsley Stowell, Editor of House Beautiful; Ethel B. Power, author; Andre Fouilhoux, architect of New York; Pope Barney, architect of Philadelphia; and H. F. Hentz of Hentz, Adler and Shutze, architects of Atlanta.

The winners in Class I (houses east of the Mississippi) were—

1st—Perry M. Duncan, New York City
Graham Edgar House, Bronxville, N. Y.
2nd—Hunter McDonnell, New York City
Norman Kadison house, White Plains, N. Y.
Honorable Mention—Edwin M. Loye, Bronxville, N. Y.
Raymond A. MacDonald house, Scarsdale, N. Y.
Honorable Mention—Royal Barry Wills, Boston, Mass.
House in Revere, Mass.

The winners in Class II (houses west of the Mississippi) were—

1st—William Wilson Wurster, San Francisco, Cal.
Edwin S. Berry house, Santa Cruz, Cal.
2nd—Frederick L. R. Confer, Berkeley, Cal.
Mr. & Mrs. W. H. Hall house, Sausalito, Cal.
Honorable Mention—Wallace Neff, Hollywood, Cal.
Robert F. Garner, Jr. house, San Marino, Cal.
Honorable Mention—William Wilson Wurster, San Francisco, Cal.
Mr. & Mrs. Forest Naylor house, Oakland, Cal.
Honorable Mention—Winchton L. Risley, Los Angeles, Cal.
Nelson Wheeler house, Pasadena, Cal.

The winners in Class III (week-end houses) were—

1st—Gardner A. Dailey, San Francisco, Cal.
William Lowe, Jr. house, Woodside, Cal.
Honorable Mention—(1) Harwell Hamilton Harris, Los Angeles, Cal.
House at Fellowship Park, Los Angeles, Cal.
(2) Donald Beach Kirby, Balboa Island, Cal.
Mr. & Mrs. Fred Pease house, Balboa Island, Cal.
(3) William Wilson Wurster, San Francisco, Cal.
Miss Diantha Miller house, Carmel, Cal.
(4) William Wilson Wurster, San Francisco, Cal.
Frank McIntosh house, nr. Los Altos, Cal.

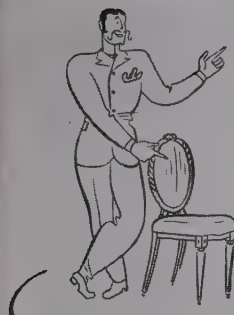
ANNOUNCEMENTS

Don Uhl, Architect, announces the removal of his office to 183 N. Martel Avenue, Los Angeles, Cal.

James B. Hawkins and William A. Netherland, Architects, announce that they have dissolved partnership. Mr. Netherland will continue his practice at the former location, and Mr. Hawkins has opened an office at 405 Elsby Building, New Albany, Ind.

E. Burton Corning, Architect, announces the removal of his office to 1640 Connecticut Avenue, N. W., Washington, D. C.

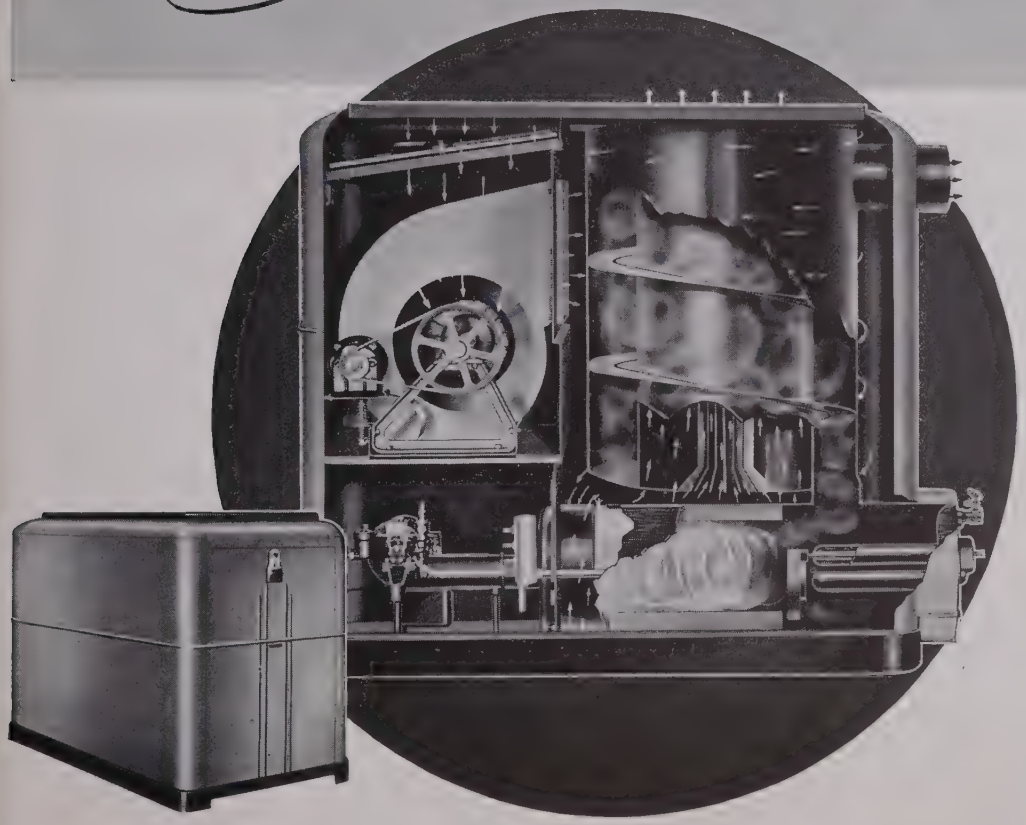
Gerald S. Adelman announces the opening of an office at 104 S. Michigan Ave., Chicago, for the practice of architecture and is interested in manufacturers' catalogs.



Tastes may differ widely in regard to style of architecture, interior decoration and the like. Period furniture and period houses may always be popular with some.

but no one wants a

Period Heating System



- COMPLETE CHANGE OF AIR EVERY 10 MINUTES.
- 95% OF THE IMPURITIES REMOVED FROM AIR.
- OVER 80% EFFICIENT...AS COMPARED WITH 20% TO 40%.
- CONTROLLED HOT WATER THROUGH HEATING SEASON.
- QUIET, EFFICIENT FAN TO CIRCULATE THE AIR.

THIS UNIT (*The Norge Fine-Air Conditioning Furnace Unit*) MAKES THE MODERN HOME MORE MODERN

For the modern home Norge offers the complete solution to the problem of heating and air conditioning. The Fine-Air Conditioning Furnace Unit performs the functions of warming, filtering, humidifying and circulating air with an amazing degree of efficiency—provides plenty of hot water at no additional cost.

In summer this unit may be used to circulate filtered, night-cooled air or—if desired—may be supplemented with cooling and de-humidifying equipment.

Get the detailed facts about the Norge Unit. Call the Norge distributor or write direct to us for descriptive literature.

NORGE HEATING AND CONDITIONING DIVISION Borg-Warner Corporation, *606-670 East Woodbridge Street, Detroit, Michigan*

NORGE

Fine-Air Conditioning Furnace Unit

Get the complete story of Norge home appliances for apartment or home installation. There are distinct advantages in standardizing on Norge equipment, apart from the exceptionally high quality of the products themselves.

DOUBLE FEATURE, STARRING 'INCOR'

Perhaps you are facing the same kind of problem which John Eberson, New York architect, solved last Fall in completing Washington's new Penn Theatre. Behind-schedule construction and approaching cold weather, with its concrete frost-hazard, meant overtime and costly heat-protection to the contractor—delayed opening date and lost revenue to the owner. Mr. Eberson got both parties together, and they decided to use 'Incor' 24-Hour Cement for the all-concrete balcony, with its inclined beams and supporting risers, 20-foot cantilevered span.

District of Columbia Code specifies 21-day shore removal in fall and winter. 'Incor' test cylinders, job cured at 51° by building inspector, averaged 5-day strengths of 2160 lbs.—exceeding the 28-day requirement with ordinary cement. Result, riser forms stripped in 4 days, beams in 6 days. Total of 15 days saved by using 'Incor', theatre opened on time, owner's revenue protected.

A 15-day time saving, with job overhead $50 a day, means a $750 cash saving, and 'Incor' also saves costly heat-protection, because it is self-supporting, safe from frost-hazard, in one-fifth the usual time. An important two-way saving, which suggests that architects consider the economy of changing to 'Incor' on jobs now in progress. Write for free copy of new book, "Winter Construction" —address Lone Star Cement Corporation, Room 2211, 342 Madison Ave., New York . . . 'Incor'* and Lone Star Cement sales offices in principal cities.

*Reg. U. S. Pat. Off.

'INCOR' 24-HOUR CEMENT

Scale Detail into Client's Drawing

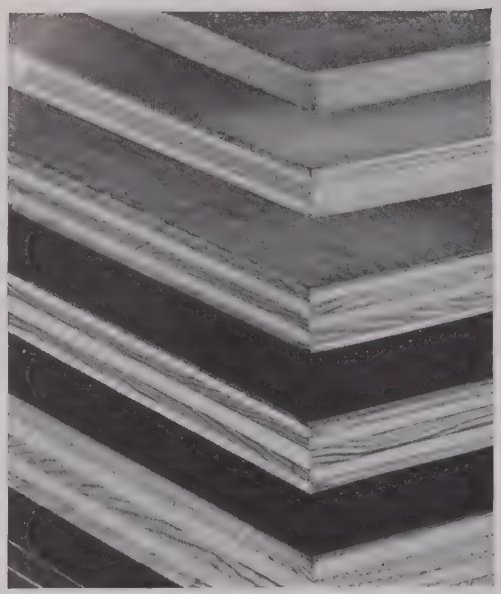
T-SQUARE RENDERING

"Too often the architect or draftsman who can make an excellent appearing working drawing cannot turn out a convincing freehand rendering. While it would be well worth the effort to learn how to do a sketchy presentation drawing, in the interim the best results can be obtained by using the T-square and triangle for rendered elevations or scale drawings. Referring to any set of competition drawings will serve to illustrate how effective the precise rendered drawing can be. It takes more time to produce a detail such as the one shown above, compared to a quick freehand effort, but it has the added value of accuracy. Moreover, anyone can do it. The exact relation of surfaces can be indicated by the pattern of shadows. When it comes time to develop full-size details, an accurately drawn and rendered scale detail will be of immense help in determining the best profile for projecting members."

GERALD K. GEERLINGS.

NO matter how *you* feel about details of the Colonial as compared with the modern, you need a pencil with a sensitive "feel" to do justice to either. Pick up certain pencils and you know before the end of the first line that things aren't going well—and won't get better. Pick up a Microtomic Van Dyke and use solely an F grade if you choose, as was done for the entire drawing above (reproduced actual size), and at once sense what may be termed a "facile point." The wood whittles easily. The lead wears down slowly. Best of all the lead is so strong that when bearing down hard, as with an F Microtomic to get good blacks, the point will neither crumble nor grumble. If you want to be able to concentrate on the drawing and never give the pencil a thought, Microtomic Van Dykes are the most obvious solution.

MICROTOMIC VAN DYKE
EBERHARD FABER



TEGO-BONDING

MEANS EXPOSURE-PROOF PLYWOOD

PLYWOOD that is really proof to water, weather and mold has become an established commercial product in the past two years.

Tego-bonding,—gluing with dry resin film adhesive,—has made the availability of such a material a fact.

Tego-bonded plywood offers not merely *improved* resistance to moisture and exposure breakdown. It offers *permanent* assurance against delamination due to glue deterioration, whether from water, climate changes or mold growth.

Tego Glue Film is manufactured by THE RESINOUS PRODUCTS AND CHEMICAL CO., Inc., Philadelphia.

RESINOUS PRODUCTS

BOOKS

TRINITY CHURCH IN NEWPORT, RHODE ISLAND. By Norma Morrison Isham. 111 pages, 7¾ by 10¼ inches. Illustrations fro photographs and drawings. Boston: 1936: D. B. Updike, The Merr mount Press. $5.

Here is the architectural history of the church fabric c the oldest parish in Rhode Island. Its importance in ex emplifying the strength of Sir Christopher Wren's wor in influencing our early meeting houses, well warrants th scholarly treatment afforded it by Norman Morrison Ishan Mr. Isham has come to be regarded as the outstanding au thority on the early architecture of his State, and this pa ticular subject seems to have enlisted his most painstakin study and research. The first church, 1701-1726, was re placed by a second structure, 1725-1762, which was length ened and otherwise altered to its present form. Incidentall D. B. Updike has given the volume a typographical dre worthy of its subject matter.

SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTIO OF STRUCTURAL STEEL FOR BUILDINGS. Revised 193 26 pages, 8½ by 11 inches. Illustrations from graphs. Pamph binding. New York: 1936: American Institute of Steel Constructio Single copy gratis, variable prices in quantities.

This booklet is the result of an authorization, by the Boa of Directors of the American Institute of Steel Constru tion, of a committee to review the Institute's standard speci cation. After two years' work, the committee has complete its task, and the specification now printed was official adopted by the Board June 24, 1936. It recognizes, of cours the increase of basic unit stress from 18,000 to 20,000 poun per square inch.

FROM FOREST TO FURNITURE. The Romance of Wood. By M colm H. Sherwood. 284 pages, 5½ by 8½ inches. Illustratio from photographs. New York: 1936: W. W. Norton & Co., Inc.

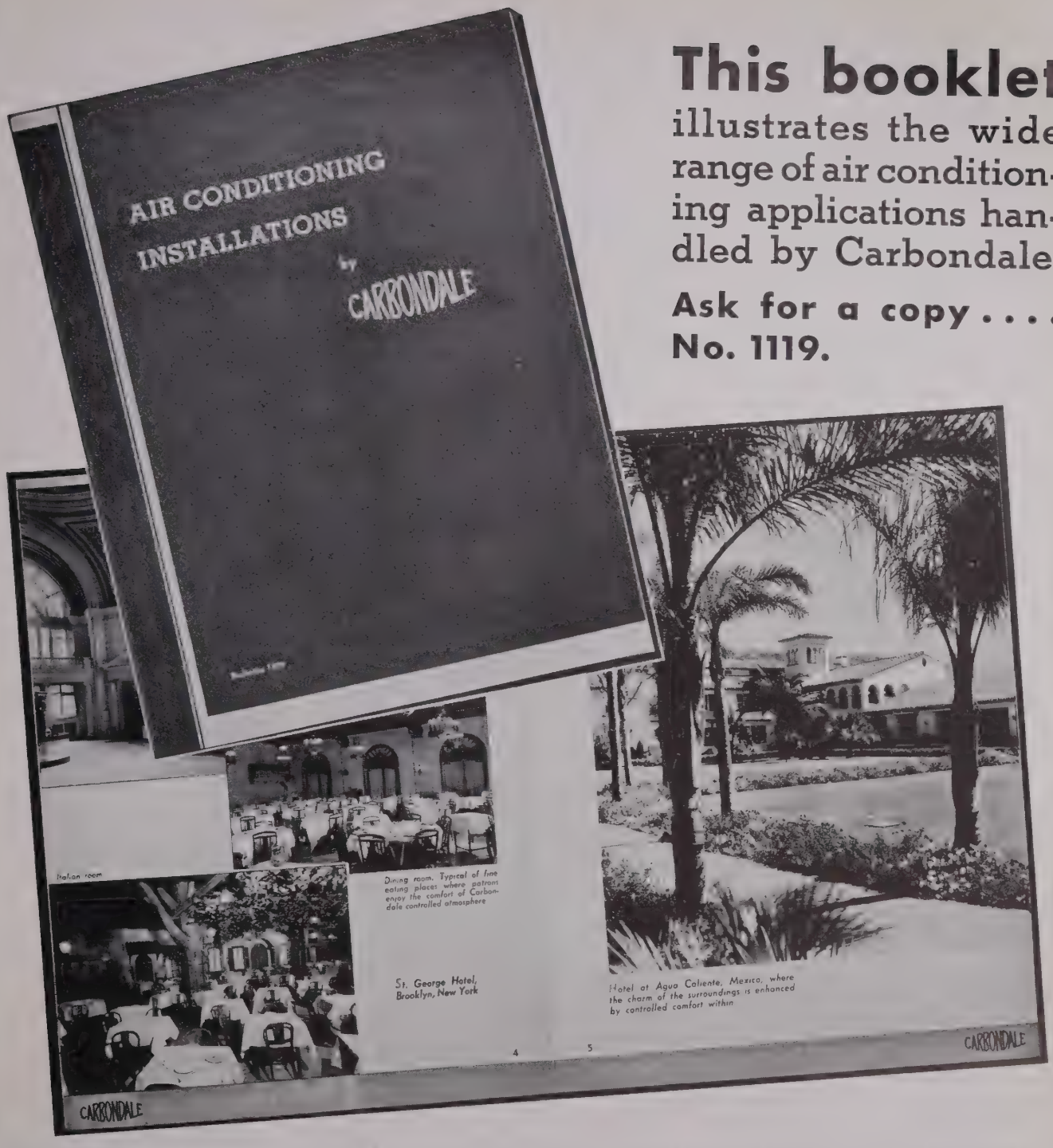
The word "romance" in the title is significant. Here w be found no records of stresses and strains, manufacturi processes and grading rules. The author is interested in te ing the story of where the many varieties of wood origina finding their way eventually into our furniture, our paneli and wall veneers. To make up for his romanticism, he a pends a table of condensed data, listing sixty woods, the commercial sources, botanical names, color, and one or tw other significant facts.

PAPERS PRESENTED AT THE FIRST ANNUAL CONFERENCE O AIR CONDITIONING. Held at the University of Illinois M 4 and 5, 1936. 154 pages, 6 by 9 inches. Illustrations from pho graphs and diagrams. Pamphlet binding. Urbana, Ill.: 1936: En neering Experiment Station. 50 cents.

Here is a wide range of detail and discussion regardi air conditioning in a comparatively non-technical manne There is no attempt to discuss the many phases of industr air conditioning bound up with the manufacture of ma commercial products. Each of the papers was presented by technician recognized as an authority on the subject of whi he wrote.

PLANNING NEIGHBORHOODS FOR SMALL HOUSES. Techni Bulletin No. 5. 32 pages, 6 by 9¼ inches. Illustrations from dr ings. Pamphlet binding. Washington, D. C.: 1936: Federal Hous Administration.

The principles involved, and the methods of achieving proper plot plan for residential communities, the governi principles of thoroughfares, culs-de-sac and street patter generally, are set forth in succinct text and diagrams.



This booklet

illustrates the wide range of air conditioning applications handled by Carbondale.

Ask for a copy.... No. 1119.

FOR small stores, large department stores, public buildings, hotels, banks, theatres, hospitals, offices... wherever human comfort is a consideration... air conditioning means better business.

Carbondale specialists will gladly estimate your requirements, without obligation.

DISTRIBUTORS

We have a few desirable territories open for distributors who can qualify.

CARBONDALE

CARBONDALE MACHINE CORPORATION

UNIT OF WORTHINGTON PUMP AND MACHINERY CORPORATION

General Offices: HARRISON, NEW JERSEY

ATLANTA BOSTON BUFFALO CHICAGO CINCINNATI CLEVELAND DALLAS DENVER DETROIT EL PASO HOUSTON KANSAS CITY LOS ANGELES NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH ST. LOUIS ST. PAUL SAN FRANCISCO SEATTLE TULSA WASHINGTON

AR-3648

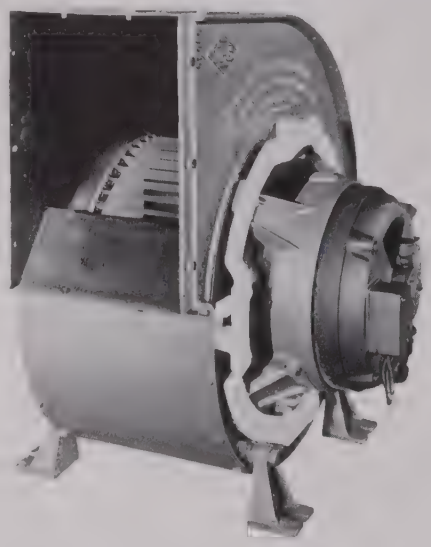
TECHNIQUES

METHODS • MATERIALS • RESEARCH • PRACTICES

BONDING RESIN FOR VENEERS AND PLYWOOD

A new synthetic resin, developed for use in the production of superior grades of plywood and other laminated products, has recently been placed on the market. This material, termed "Catabond," is practically colorless and can be used as a bonding material between the different plies as well as a surface coating. Both operations are performed at the same time during the hot pressing of the plywood or veneer. Catabond is said to be waterproof, weatherproof and highly resistant to washing and to injury by fungus growth, insects and the like. It can be applied in bonding wood that has been rendered fireproof by salt or other impregnation and in bonding wood or other materials to such composition fireproof boards as Transite and Masonite. The resin itself is said to be non-inflammable and resistant to heat up to temperatures at which wood itself is injured. Forming a transparent and practically colorless film when it is applied to wood prior to curing, it is said to take the place of lacquer or varnish and the grain of the wood is brought out in the same way. If a colored surface is required, the wood may be stained or pigment can be mixed with the liquid resin when it is applied. Catabond is produced and marketed by American Catalin Corp. 684M

AIR-CONDITIONING



BRACKET FOR QUIET BLOWER

The development of a sound and vibration dampening device for a direct-connected blower has been announced by Ilg Electric Ventilating Co., Chicago. This new mechanism, known as a "floated drive bracket" is intended for use on Ilg direct-connected blowers in those installations where extra precautions must be taken in the maintenance of unusual quietness of operation. The standard motor bracket is mounted on a second floating bracket which is insulated from the blower housing to which it is secured by flexible rubber cushions. There is no metal to metal contact between this floated drive bracket and the blower housing. It is claimed that due to the Ilg method of direct connection in which the blower wheel is mounted directly on the motor shaft, permitting the isolation of both motor and wheel as a single unit when using the Ilg floated drive, maximum quietness is assured. 685M

FLOOR AND CEILING PLATES

Floor and ceiling plates, made especially for copper pipe sizes to give a finished appearance to pipe lines where the pipe is run into the wall, floor or ceiling, are now available through American Radiator Company, New York. Made with a non-tarnish chrome finish, the floor and ceiling plates employ a special spring that holds the plate in place without noise. 686M

ANOTHER Koh-i-noor PRODUCT

DESCRIBED BY A.L.GUPTILL

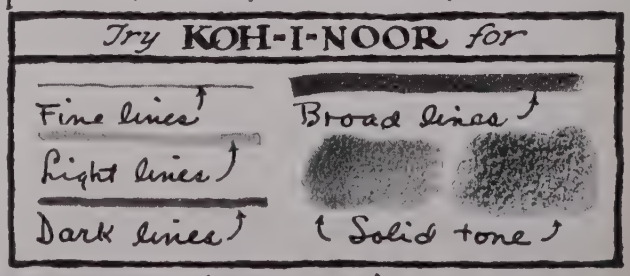
The Original Yellow Pencil

Available in 17 degrees

THE FAMOUS KOH-I-NOOR DRAWING PENCIL (No 1500)

THIS PENCIL is known, by reputation at least, to everyone to whom the graphite pencil is a necessary working instrument. It comes in 17 degrees, ranging from 6B to 9H. Every lead is dense, smooth, uniform, and free from grit. The wood is firm, well-seasoned and straight grained. This perfection makes the KOH-I-NOOR economical. So enviable is its reputation that its yellow color has been copied by many imitators. It sells for 15 cents, or $1.50 a dozen.

The "Artists' Pencil" (below) has the identical leads (No. 2200) in all 17 degrees. They are 60¢ for a box of six. The adjustable holder pictured (No. 1511) sells for 50¢.



KOH-I-NOOR ARTISTS' PENCIL (No 1511)

KOH-I-NOOR PENCIL CO., INC.

373 FOURTH AVE • NEW YORK • N. Y.

Now

the latest in

WINDOWS

for

Homes of Moderate Cost

as well as for

Towering Buildings

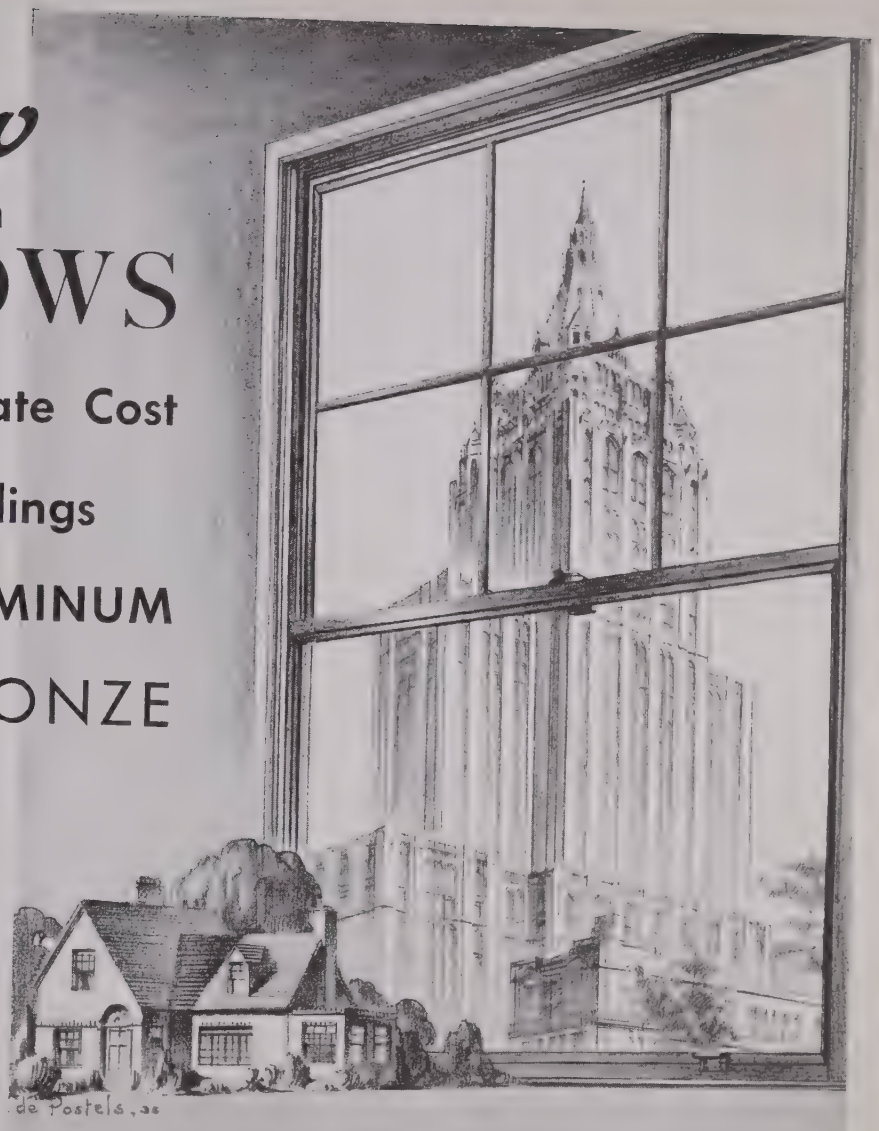
in

BRONZE *or* **ALUMINUM**

by

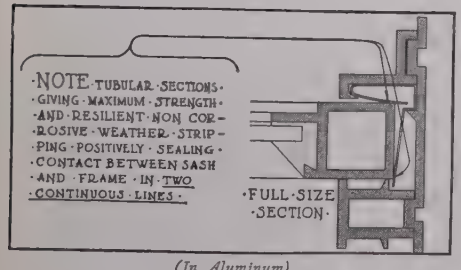
GENERAL BRONZE

Superior windows of Bronze and Aluminum heretofore were only considered on the more costly and monumental buildings. These new patented windows — in both casement and double hung — are now within the budget of homes of moderate cost.



A SMALL RESIDENCE can now include windows of quality by General Bronze.

THE NEW YORK LIFE BUILDING indicated above, contains over 2600 **General Bronze windows installed in 1928.** *Cass Gilbert, Architect*



(In Aluminum)

AIR-TIGHT

RUST, DUST AND RATTLE-PROOF STURDY CONSTRUCTION
EASY OPERATION LOW UPKEEP

Particularly desirable in air-conditioned buildings

DOUBLE HUNG **PERMATITE WINDOWS** CASEMENT

GENERAL BRONZE CORPORATION

34-19 TENTH STREET • LONG ISLAND CITY, N. Y.

Full data in new catalogue. Send for your copy or see Sweet's 1937 Catalogue

TIME-SAVER standards

Announced only a year ag

O-DAY USED BY OVER 6,00

OCTOBER, 1935, American Architect announced the inauguration of TIME-SAVER STANDARDS rice. Within twelve months more than 6,000 architects, engineers, designers, specification writers and other e responsible for the selection of hundreds of millions of dollars worth of building material and equip-, have applied for and have been enrolled to receive these TIME-SAVER sheets.

These sheets serve the architect by answering all questions of design or equipment at the time these ctions arise. They save looking through many reference books. They place in a compact volume at esigner's elbow the data he constantly needs and uses.

Architects and planners in all parts of the country have praised this service for its practical value and ibility. They say—"TIME-SAVER STANDARDS are architecturally-minded." This is because the e s are prepared by architects who know what kind of information other architects want and how they want it presented — clearly, concisely, authoritatively.

PLANNERS

Manufacturers find TIME-SAVER STANDARDS equally valuable. They decrease sales costs, increase pres- and acceptance, create confidence, save time. Among the companies for whom our Technical Service has prepared TIME-SAVER STANDARDS are General Electric, Westinghouse Electric, Electrolux, Oil Burner, Revere Copper and Brass, Reynolds Corporation, Western Red Cedar Lumber. Under con- are Crane, Otis Elevator, American Radiator, International Nickel.

Twelve months ago an innovation—today in constant use by more than 6,000 of the busiest architects, eers, and designers in America.

AMERICAN ARCHITECT and ARCHITECTURE

572 MADISON AVENUE • NEW YORK

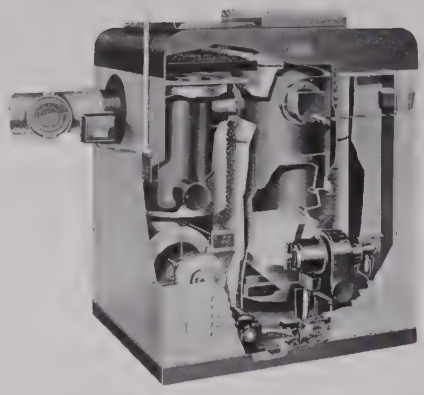
CAGO • PHILADELPHIA • SAN FRANCISCO • ATLANTA

TECHNIQUES

METHODS • MATERIALS • RESEARCH • PRACTICES

WINTER AIR CONDITIONING FURNACE

A new type of low-cost winter air conditioning oil furnace features a chromium steel fire-box used in conjunction with a pressure oil burner. This metal fire-box replaces the usual brick or cast refractory. The bottom and all of the sides of the combustion drum are used as heating surfaces. The unit is designed on the "counter-flow" principle, which enables air passing through the unit to absorb maximum heat. The air passes over increasingly hotter surfaces so that the hottest air contacts the hottest part of the furnace just before leaving the unit. The cabinet is of heavy gauge steel, finished in baked green lacquer. Controlled moisture supply is made possible through the use of a humidifier equipped with an automatic water supply mechanism. The unit has a capacity of 80,000 Btu at the registers and can deliver from 800 to 1200 cubic feet of air per minute. It is made by The Timken Silent Automatic Division of The Timken-Detroit Axle Co., Detroit, 688M



5 reasons why Craftsmen Prefer "Castell"

If it were possible to compile a complete list of projects . . . architectural and industrial . . . which are being conceived and drawn with "Castell" Drawing Pencils it would doubtless stagger the imagination.

All we know is that the foremost architects, engineers, machine designers and draftsmen . . . men responsible for the nation's march of progress . . . buy and use "Castell" . . . the world's standard of quality.

1. Positive accurate grading in 18 degrees . . . 7B to 9H.
2. World's finest graphite purified by many processes to make it *super*-smooth.
3. Wear resisting properties outlive ordinary pencil 2 and 3 times.
4. Great strength under pressure even when sharpened to needlepoint.
5. Softest degree does not flake or crumble. Hardest does not scratch.

A. W. FABER, INC. • NEWARK, N. J.
MADE IN BAVARIA

N. B. *If you are using "Castell" on a noteworthy project we should like to know about it. "Castell" pencils in your favorite degrees are yours in exchange for this information.*

HEAT

OIL HEATING BOILER

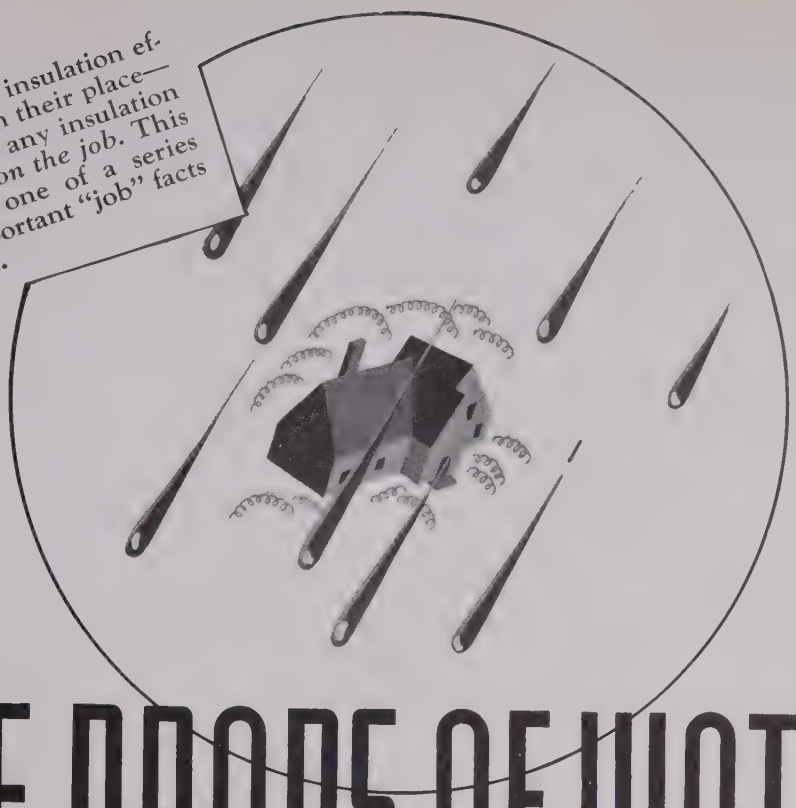
The National 018 Series Oil Heating Boiler, recently introduced by the National Radiator Corp., Johnstown, Pa., is especially designed for automatic heating with the use of oil as a fuel and is equipped to furnish year-round domestic hot water supply without any auxiliary hot water heating equipment being required. The boiler is of cast iron construction with a 42-inch waterline carried through the top nipple ports. Extended heating surface, in the form of fins, is provided on the crown, waterlegs and flue chambers of the sections which provide a four-pass fire travel. The back section of the boiler is flanged to accommodate either of two sizes of storage type built-in hot water heating coils or an instantaneous type coil heater. A 40-gallon storage type coil is furnished as standard equipment. Cleanout and access doors are immediately removable, and lock into ground seats upon replacement. Both have cast-iron liners and are heavily insulated. The jackets, designed by Lurelle Guild, are finished in baked enamel. 689M

CONSTRUCTION

LAMINEX STREAMLINER DOOR

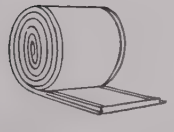
The Laminex Streamliner Door is manufactured with plain panel surfaces of 3-ply Douglas fir or Philippine mahogany. The rigidly braced hollow core is said to provide strength with light weight. It has a series of channels, screened at exterior openings, allowing thorough circulation of air for resistance to warping effects of moisture and temperature changes. Laminex cement is used in this new type door to provide a permanent, moisture-proof bond. The surface of the Streamliner Door can be painted or stained. Virtually any arrangement of panel effects can be obtained, and routed and inlaid designs are provided. A Streamliner Cupboard Door, built on the hollow-core principle, is also available. Both doors are a recent development of Wheeler, Osgood Sales Corp., Tacoma, Wash.

● Laboratory tests of insulation efficiency are useful in their place—but the final test of any insulation is what it will do *on the job*. This advertisement is one of a series dealing with important "job" facts about insulation.



LITTLE DROPS OF WATER

. . . don't let them spoil insulation value for YOUR clients!



Certainly you want to give your clients the most insulation value per dollar spent.

Then be sure that the insulation you specify is *fully* protected from moisture! For water and water vapor are deadly enemies of insulation. A good insulation material must be amply and positively protected from condensing moisture in walls, ceilings and roofs.

Balsam-Wool Blanket Insulation is *sealed* in a tough, waterproof covering. Moisture cannot get into this insulation to rob it of efficiency. There can be no condensation within the material to cause decay of framing members. Season after season, year after year, Balsam-Wool retains its high insulating value.

Unlike materials that are merely hand-packed or blown in, Balsam-Wool is fastened in place. It assures you of getting *continuous* insulation, with no uncovered spots for the wind to blow through. Balsam-Wool does not settle . . . does not change its form. In addition, it is vermin-proof and highly fire-resistant.

Balsam-Wool enables you to specify the right amount of insulation for every building and every climate. It comes in *three* thicknesses. With Balsam-Wool, you need never waste money by specifying *too much* insulation . . . never run the risk of specifying *too little*.

Complete information about Balsam-Wool is yours for the asking.

BALSAM WOOL

WOOD CONVERSION COMPANY

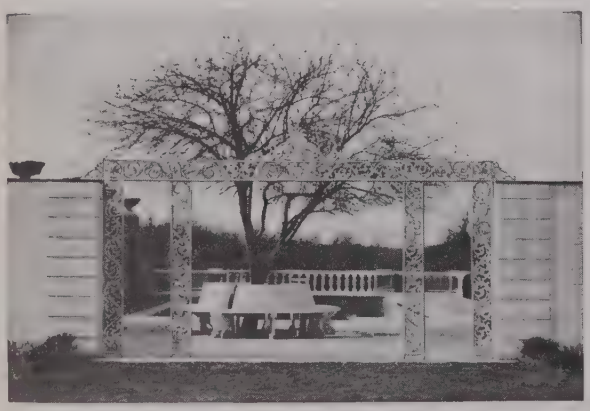
WEYERHAEUSER FOREST PRODUCTS

Made By The Makers of
NU-WOOD

ST. PAUL · · · MINNESOTA

Products of Weyerhaeuser

SMYSER-ROYER CO.



CAST IRON VERANDAS
and RAILINGS

Smyser-Royer cast iron verandas and railings have a wide variety of applications. Write for our new catalogue.

SMYSER-ROYER COMPANY

Main Office and Works, York, Pa.
Philadelphia Office:
Architects' Building, 17th and Sansom Streets

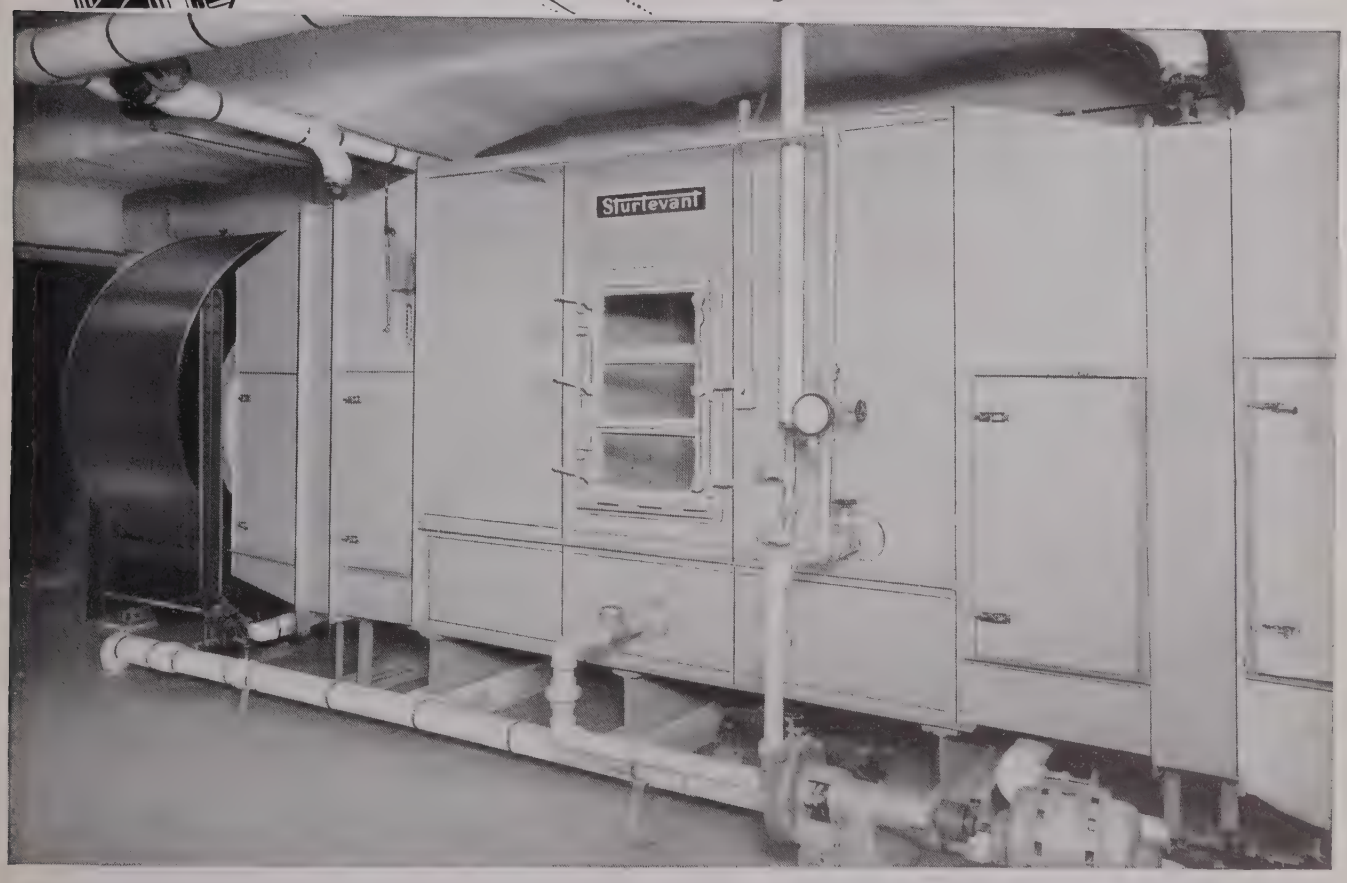
OBITUARIES

Edwin Howland Blashfield, dean of American mural painters, died recently at the age of 87 years at his home in South Dennis, Mass. Mr. Blashfield was for 38 years President of the National Academy of Design. He was born in New York, son of William Henry and Eliza Dodd Blashfield. He attended the Boston Latin School. Mr. Blashfield began the study of art in Paris under Léon Bonnât in 1867. He remained in Paris for thirteen years exhibiting annually from 1874 to 1879 in the Paris Salon. Mr. Blashfield, upon his return to this country, became an easel painter until early in the 90's when he turned to murals. In 1892 he was commissioned by the City of Chicago to paint murals for the Columbian Exposition of 1893. Along with seven other artists including Kenyon Cox, Carrol Beckwith, Walter Shirlaw, Stanley Reinhard, Julian Alden Weir, Edward Simmons and Robert Reid engaged in designing murals of the same project, Mr. Blashfield turned out his paintings in six weeks. These men were the first important American muralists, since the only fine work of this nature done previously had been by John Lafarge and William Morris Hunt, but after the Exposition in which, incidentally, the paintings were destroyed by fire, there became an increased demand for mural work. From then on the road to fame was clear for Mr. Blashfield. Other of his important works include the central dome of the Library of Congress in Washington; decorative panels in the Bank of Pittsburgh, Lawyers Club, New York; the library of the town house of G. W. C. Drexel, and the supper room of the New York house of W. K. Vanderbilt; the Appellate Court of New York and a ceiling (and three lunettes) in the board room of the Prudential Life Insurance Company of Newark, N. J. He also decorated a room in the house of Adolf Lewisohn, New York; two lunettes in the Senate Chamber of the State Capitol of Minnesota; a panel in the State Capitol of Iowa; the decorations in the chancel of the Church of the Saviour, Philadelphia; the four main pendentives of the dome of the new Court House in Newark, N. J.; a symbolic decoration in the Great Hall of the College of the City of New York; murals in the State Capitol in Madison, Wisconsin; the Court House and the Federal Building in Cleveland, and a decoration in the State Capitol of South Dakota. In 1911 he received a gold medal of honor from the Architectural League of New York for his four pendentives in the Court House in Youngstown, Ohio. Mr. Blashfield was a member of the Society of Mural Painters; the Architectural League and the American Academy of Arts and Letters. He was President of the National Institute of Arts and Letters in 1915-16 and received its gold medal in 1923; he was vice president of the American Federation of Arts, president of National Academy of Design and member of the Federation of Fine Arts of New York. He was also an honorary member of the American Institute of Architects and also former president of the Society of American Artists. He lectured extensively on art, notably at Columbia, Yale and Harvard Universities. Among his many other awards were a bronze medal from the Paris Exposition in 1900; a gold medal from the St. Louis Exposition, 1904; a medal of honor of the New York Architectural League; the Carnegie Prize of the National Academy of Design, 1911, and the gold medal of the National Institute of Arts and Letters, 1923.

(*Continued on page* 124)

AIR WASHERS

FOR EVERY NEED—LARGE OR SMALL



STURTEVANT has Air Washers in capacities for every need... in types for every public building, commercial or industrial use. ¶ Sturtevant makes available one *central source of supply* for air washers, fans, motors, control, heating and cooling coils. ¶ Take advantage of this convenience. It is time-saving... and it assures *undivided responsibility*.

Photo shows Sturtevant Air Washer installed in new addition to building of Associated Screen News Limited, subsidiary of Canadian Pacific Railway Co. Capacity of unit...10,000 c.f.m. at 1" static.

Engineer: E. B. Plant (C. P. Ry. Engineering Staff). *Architects:* Staff of the C. P. Ry. *General Contractor:* A. Janin & Company, Limited. *Heating & Ventilating Contractor:* Webber & Grannery Sheet Metal Works.

B. F. STURTEVANT CO., Hyde Park, BOSTON, MASS.
New York, N.Y. 420 Lexington Ave. Chicago, Ill., 400 N. Michigan Ave.
San Francisco, Cal., 681 Market St. *Branch Offices in 40 Other Cities*

B. F. STURTEVANT COMPANY OF CANADA, LTD., GALT.
Sales Offices in Toronto and Montreal *Repres. in Principal Canadian Cities*

Sturtevant
REG. U. S. PAT. OFF.

Puts Air to Work

SPECIALISTS IN AIR ENGINEERING FOR OVER 75 YEARS

NEW CONFORMING SEAL

A Jamison feature found on no other cold storage door. This resilient, pure-rubber gasket, of a special cellular construction, gives perfect insulation and permits an air-tight, CONFORMING seal. Outlasts old types ten times. No pinching up required.

Standard on all new JAMISON-BUILT Doors, or available for replacement on any make door. CD for cooler doors; SF for super-freezers. For more information, address

Jamison Standard Cooler Door

JAMISON COLD STORAGE DOOR CO.

Jamison, Stevenson, and Victor Doors

HAGERSTOWN, MD. - - U. S. A.

Branches in principal cities
See our Catalog in Sweet's Architectural File

JAMISON BUILT DOORS

The beautiful submarine lighting of the New York City Park

SWIMMING POOLS

is produced by Kliegl underwater units of several designs, ranging from 250- to 1500-watts. Built-in or removable types, all of heavy bronze construction with 30° spread heat-resisting lenses. Illustration above pictures No. 1712 for pools approximately 50 ft. wide. Ask for bulletin 5861 describing our complete line of underwater units and floodlights.

KLIEGL BROS.

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

321 West 50th Street, New York City

Finley Forbes Ferguson, architect, died recently at his home in Norfolk, Va. He was 60 years of age. He attended Hampden-Sydney College and the Massachusetts Institute of Technology. He began practicing architecture in Norfolk in 1899. In 1917 he became a member of the firm of Peebles & Ferguson. Mr. Ferguson was responsible for the plans of the Virginia Museum of Fine Arts, Phi Beta Kappa Memorial Hall and Grace Covenant Presbyterian Church in Richmond and Ghent Methodist Church, First Presbyterian Church and Obef Sholon Temple in Norfolk. He was a member of the advisory committee of architects on restoration work in Williamsburg, Va., a trustee of Norfolk Academy; a member of the board of the Norfolk Public Library and the Norfolk Society of Arts.

Lee D. Miller, Deputy Commissioner of Hospitals in New York, and head of the department's architectural-engineering force died recently at his home in Croton, N. Y. He studied architecture at the University of Pennsylvania, engineering at Columbia, and building laws at New York University. Before entering the service of New York City, he was for five years superintendent of construction of public buildings in Minneapolis. Under his direction, the Department of Hospitals developed a capital outlay program which calls for an expenditure of more than $50,000,000. He was also in charge of the work of WPA architects and engineers working on plans for 600 alteration projects estimated to cost $12,000,000. Mr. Miller was a member of the American Institute of Architects.

Frederick T. Labouisse, architect and etcher, died recently in Ellsworth, Maine. Mr. Labouisse was 28 years old, a graduate of St. Mark's School and later a special student at the School of Fine Arts at Yale University.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of AMERICAN ARCHITECT AND ARCHITECTURE, published monthly at New York, N. Y., for Oct. 1, 1936.

State of New York } ss.:
County of New York }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared R. F. Gardner, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the American Architect and Architecture and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Hearst Magazines Inc., 959 8th Ave., New York City. Editor, Kenneth Stowell, 572 Madison Ave., New York City. Managing Editor, Carl Maas, 572 Madison Ave., New York City. Business Manager, R. F. Gardner, 572 Madison Ave., New York City.

2. That the owner is: Hearst Magazines Inc., 959 8th Ave., New York City. Sole Stockholder, The Hearst Corporation, 100 West 10th St., Wilmington, Del. Sole Stockholder, American Newspapers, Inc., 100 West 10th St., Wilmington, Del. Sole Common Stockholder, W. R. Hearst, 111 East 57th St., N. Y. C.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

R. F. GARDNER,
Business Manager.

Sworn to and subscribed before me this 21st day of September, 1936.

[Seal.] REGINALD WEST.

Notary Public, Queens County, No. 2516, Reg. No. 2518. Cert. filed in N. Y. County, No. 518. Reg. No. 8W312. Commission expires March 30. 1938.

New SCRIBNER Books

HEADS AND TALES

Copyright Field Museum of Natural History

by

MALVINA HOFFMAN

•

Art, science, travel, adventure and humanity are superbly combined in this absorbing autobiography of an internationally famous American sculptress whose fascinating life story leads the reader from the sidewalks of New York, through the studio of Rodin, to South Sea island jungles and golden cities of the Orient. Much of the book is devoted to Miss Hoffman's amazing world-wide quest for the racial types that now appear in the bronze statues of the Hall of Man in the Field Museum in Chicago. The 128 pages of illustrations rival the brilliant text in interest. $5.00

English Church Screens

Being Great Roods, Screenwork and Rood-Lofts of Parish Churches in England and Wales

by **Aymer Vallance**
F.S.A.

•

This complete and authoritative work by one of England's leading authorities on ecclesiastical art and architecture will, without doubt, become the standard work on the subject. Profusely illustrated, there are more than 250 pictures in black and white and a number of color plates. $10.00

Houses for Moderate Means

by

R. Randall Phillips

•

Seventy selected modern English homes falling within the $2500 to $7500 price range are fully described and illustrated with photographs and floor plans by the famous author of "Small Family Houses." Many styles including modern, Georgian and cottage style are presented to give a complete picture of the English small houses being built today. $2.75

At All Bookstores **CHARLES SCRIBNER'S SONS** *At All Bookstores*

Select any pattern

of PYRAMID *Snap-On* MOULDING

All are beautiful, permanent and easy to apply. The wide range of styles, finishes and sizes of Pyramid SNAP-ON Mouldings make distinctive trim specification easy from standard designs—with consequent minimum investment.

Pyramid SNAP-ON Mouldings are quickly and easily applied on top of wallboard, plaster or other materials *after* all work is finished. They may be placed where good decoration indicates. They need not fit between joints or over edges. The SNAP-ON feature conceals all nails or screws in the track which firmly holds the covering moulding. The SNAP-ON installation method often affords a labor saving of fifty per cent.

Pyramid SNAP-ON Mouldings are available in Stainless Steel in Satin and Mirror finishes. They can never tarnish, rust or corrode. Bronze, Copper and Brass are also standard finishes.

Send today for the new folder which illustrates Pyramid SNAP-ON Mouldings in typical modern use. A variety of standard designs are shown which will prove interesting for up-to-the-minute decoration.

THEY *Snap-On*

1. Nail on track.
2. Hook flange of moulding under one side of track.
3. Snap on the moulding. All nails and screws are covered.

SEE PYRAMID PAGES IN SWEET'S

PYRAMID METALS COMPANY

460 North Oakley Boulevard, Chicago, Illinois

INDEX TO ADVERTISERS

This index is an editorial feature, maintained for the convenience of readers. It is not a part of the Advertisers' contract and American Architect and Architecture assumes no responsibility for its correctness.

Aluminum Company of America.....106, 107
American Brass Co., The.....Second Cover
American Tel. & Tel. Co..... 11
Bigelow-Sanford Carpet Co..... 97
Briggs Mfg. Co..... 9
Burnham Boiler Corp..... 100
Byers Co., A. M..... 2
Cabot, Inc., Samuel..... 104
Carbondale Machine Corp..... 115
Celotex Corp., The..... 17
Crane Co. 6
Eagle-Picher Lead Co., The..... 10
Eberhard Faber Pencil Co..... 113
Faber, Inc., A. W..... 120
Fitzgibbons Boiler Co., Inc..... 1
General Bronze Corp..... 117
General Electric Co.....Third Cover
General Insulating & Mfg. Co..... 102
Insulite Co., The.....98, 99
Jamison Cold Storage Door Co..... 124
Kliegl Bros. 124
Koh-I-Noor Pencil Co., Inc..... 116
Libbey-Owens-Ford Glass Co..... ....Back Cover
Linde Air Products Co., The..... 5
Lone Star Cement Corp..... 110
Norge Heating & Conditioning Div., Borg-Warner Corp. 109
Old Virginia Brick Co..... 7
Otis Elevator Co..... 15
Owens-Illinois Glass Co.....18, 19
Pittsburgh Plate Glass Co..... 105
Pyramid Metals Co..... 126
Railway Express Agency, Inc..... 108
Red Cedar Shingle Bureau..... 128
Resinous Products & Chemical Co., The..... 114
Revere Copper & Brass, Inc..... 13
Reynolds Corp. 101
Scribner's Sons, Charles..... 125
Sloane, W. & J..... 103
Smyser-Royer Co. 122
Sturtevant Co., B. F..... 123
Taylor Co., The Halsey W..... 122
U. S. Gypsum Co..... 127
Wood Conversion Co..... 121
Zouri Store Fronts..... 14

DATE DUE

UIC JUL 2 8 2005

UIC Rec'd JUL 14 2005

GAYLORD

PRINTED IN U.S.A.